

Ten Years of School System Data – Duplicated Grades 7-12

LEAs	'88 – '89		'89 – '90		'90 – '91		'91 – '92		'92 – '93		'93 – '94		'94 – '95		'95 – '96		'96 – '97		'97 – '98	
	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number
Chatham	4.12	109	4.07	104	3.16	80	3.66	97	3.62	98	4.85	135	3.50	98	3.78	107	3.15	88	2.81	79
Cherokee	4.43	84	3.24	59	3.37	60	2.48	41	2.93	48	3.42	57	3.11	51	3.02	49	3.64	60	3.33	54
Edenton/ Chowan	2.52	29	2.04	24	2.27	27	2.26	27	1.26	15	2.22	27	3.07	37	3.27	38	1.74	20	1.92	23
Clay	3.96	24	2.50	15	2.82	17	2.25	13	1.37	8	1.04	6	1.86	11	1.65	10	1.44	9	2.03	13
Cleveland	4.30	169	3.45	133	2.41	93	2.58	98	2.59	98	2.58	97	2.60	98	3.15	119	3.09	115	2.98	112
Kings Mountain City	5.53	108	5.85	111	5.79	108	3.31	60	3.70	67	3.49	63	3.30	59	2.76	49	2.64	47	2.82	51
Shelby City	5.96	97	4.70	77	3.36	52	1.83	28	2.33	35	2.83	42	2.94	44	3.01	44	4.72	65	4.36	58
Columbus	3.21	122	3.38	126	2.66	98	3.81	140	4.16	152	3.88	140	3.64	130	2.97	104	3.98	140	3.72	130
Whiteville City	2.22	28	2.24	29	3.36	43	0.79	10	1.74	22	3.47	45	4.70	61	2.74	34	3.07	38	1.72	21
Craven	2.71	169	2.29	143	3.30	205	2.77	178	2.71	174	2.68	174	2.77	184	2.72	180	2.64	172	2.57	166
Cumberland	4.59	954	3.65	738	4.15	844	2.59	543	2.55	544	2.60	566	3.08	684	3.85	859	3.93	868	3.49	776
Currituck	3.85	43	6.00	68	3.16	36	3.04	36	3.39	43	2.85	37	3.05	40	3.01	41	4.08	57	3.00	42
Dare	4.85	70	3.43	50	2.22	32	2.03	30	2.25	35	2.07	34	2.62	46	2.78	52	2.39	47	2.62	53
Davidson	5.92	471	6.24	485	4.64	360	3.99	313	3.22	253	3.15	251	3.97	322	3.29	266	3.42	280	2.78	231
Lexington City	3.30	47	3.29	45	3.20	42	3.64	48	2.11	27	2.47	32	4.41	59	3.53	46	5.02	66	3.53	46
Thomasville City	2.28	34	2.42	28	3.54	42	2.28	22	4.11	41	5.31	53	3.55	34	3.21	30	2.70	24	3.36	30
Davie	3.33	76	2.40	54	1.99	45	2.68	60	3.18	72	3.20	73	3.81	86	2.40	53	2.31	52	1.88	43
Duplin	3.76	140	3.61	132	3.98	143	3.11	113	2.79	101	2.55	92	2.40	86	2.43	87	2.46	88	2.05	73
Durham							3.59	443	4.26	537	3.45	434	3.83	488	4.90	623	5.21	658	5.09	645
*Durham County	5.33	463	4.27	368	3.94	345														
*Durham City	11.26	419	7.52	272	5.54	185														
Edgecombe							2.19	85	3.18	126	3.83	152	4.86	189	4.09	152	4.57	165	3.49	123
†Edge- combe County	3.91	96	2.53	61	2.05	49														
†Tarboro City	3.82	54	3.32	46	5.68	82														
Forsyth	5.50	1009	5.07	890	4.45	752	3.36	582	3.75	652	3.57	627	3.13	559	3.39	610	4.11	742	3.76	683

*Consolidated into Durham

†Consolidated into Edgecombe

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LEAs	'88 – '89		'89 – '90		'90 – '91		'91 – '92		'92 – '93		'93 – '94		'94 – '95		'95 – '96		'96 – '97		'97 – '98	
	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number
Franklin											4.26	110	4.91	146	5.15	156	5.08	153	4.53	138
•Franklin County	5.40	121	4.49	97	3.23	68	3.58	78	3.36	75										
•Franklin-ton City	5.27	38	3.61	24	4.70	29	4.16	24	2.54	14										
Gaston	5.73	866	5.08	732	3.10	425	2.62	357	2.67	356	2.69	355	2.96	391	3.03	395	3.04	398	3.36	447
Gates	2.58	19	2.61	19	3.07	22	1.95	14	1.06	8	1.50	12	2.00	17	2.30	20	2.37	21	3.09	29
Graham	4.23	27	4.31	26	2.76	17	3.53	22	4.82	30	7.67	48	4.88	29	4.56	26	5.78	32	3.22	17
Granville	4.68	150	3.26	99	3.11	95	2.28	69	2.12	65	2.36	74	2.63	83	2.61	81	2.64	82	2.43	78
Greene	2.54	34	1.73	23	3.37	44	3.61	48	3.88	52	2.35	31	2.65	36	2.52	34	1.96	26	1.99	27
Guilford							2.44	589	2.33	568	2.80	697	3.34	842	2.81	705	2.85	723	3.27	852
*Greensboro City	4.33	421	3.67	345	2.74	250														
*Guilford County	2.25	261	2.22	252	2.12	242														
*High Point City	5.12	185	4.40	156	3.86	132														
Halifax	8.44	258	6.41	194	3.91	117	2.26	65	2.88	84	4.19	124	3.36	99	3.23	95	3.72	108	3.72	105
Roanoke Rapids City	2.07	28	3.26	43	3.07	42	2.05	27	2.45	34	2.85	40	2.67	37	2.63	36	2.32	32	2.07	29
Weldon City	6.69	42	4.59	27	4.07	22	2.76	15	1.95	11	1.73	10	1.37	8	2.76	16	5.36	29	2.65	13
Harnett	4.95	278	4.08	222	3.61	196	4.01	224	3.91	220	4.73	273	3.08	180	2.75	163	3.21	197	2.62	166
Haywood	5.58	214	5.58	201	4.96	176	4.74	161	4.08	134	4.04	131	3.57	116	3.95	131	4.03	136	3.28	111
Henderson							3.56	173	3.58	176	3.42	169	3.30	166	3.53	181	2.81	145	3.69	194
†Henderson County	5.20	217	4.53	187	4.26	173														
†Henderson-ville City	4.13	37	5.20	45	4.43	39														
Hertford	2.50	50	1.71	34	2.98	58	1.28	25	1.86	37	1.83	36	3.82	76	2.83	56	2.25	45	1.71	34
Hoke	5.67	134	4.98	113	5.99	137	3.20	77	3.42	84	4.94	124	5.50	139	4.37	109	3.46	86	2.50	63
Hyde	2.81	13	4.73	21	3.10	13	2.28	9	1.28	5	1.85	7	3.25	12	3.75	14	2.42	9	2.21	8

•Consolidated into Franklin

*Consolidated into Guilford

†Consolidated into Henderson

Ten Years of School System Data – Duplicated Grades 7-12

LEAs	'88 – '89		'89 – '90		'90 – '91		'91 – '92		'92 – '93		'93 – '94		'94 – '95		'95 – '96		'96 – '97		'97 – '98	
	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number
**Iredell-Statesville	4.08	267	4.35	292	4.03	2.51	3.70	226	3.99	244	4.61	2.87	3.73	234	4.18	266	4.10	268	6.01	415
•Iredell	3.83	192	4.46	222																
Mooreville City	5.11	60	3.23	38	3.90	47	2.55	32	3.07	41	4.78	68	3.26	47	4.38	66	3.05	48	3.73	62
•Statesville City	4.86	75	4.82	70																
Jackson	3.20	59	2.80	49	3.25	56	3.60	59	2.89	47	4.02	66	4.64	78	4.51	78	4.18	72	3.80	65
Johnston	3.86	265	3.33	229	3.46	236	2.92	202	2.92	203	3.29	234	3.72	272	4.17	308	3.69	274	3.53	269
Jones	2.93	22	4.67	34	2.21	16	3.14	22	2.19	15	4.00	28	3.66	26	3.91	27	3.20	21	3.33	22
Lee	5.68	191	2.93	97	2.76	90	3.79	129	3.76	129	3.88	135	2.99	104	2.93	104	3.71	136	3.68	136
Lenoir							3.78	194	2.97	149	3.51	176	3.32	166	4.03	196	3.65	172	4.76	226
*Lenoir County	4.38	1.35	3.69	113	3.88	119														
*Kinston City	7.37	170	8.69	194	5.68	123														
Lincoln	6.34	274	6.30	261	5.04	207	4.06	166	4.27	176	3.61	149	4.09	173	3.35	144	3.80	168	3.78	173
Macon	4.40	71	3.51	54	2.14	33	1.89	30	3.73	61	4.18	71	4.99	89	4.77	87	3.57	66	3.72	70
Madison	3.05	42	5.06	67	4.96	66	3.39	43	3.05	39	2.83	35	2.64	32	3.37	41	3.36	40	3.29	38
Martin	3.57	88	4.49	109	2.55	60	2.70	63	3.18	75	2.88	68	3.48	82	3.68	86	4.00	93	3.47	79
McDowell	5.43	179	5.02	157	5.18	156	3.59	105	5.07	147	4.59	132	4.53	131	5.18	149	4.65	131	3.67	103
Charlotte-Mecklenburg	4.83	1670	6.53	2201	5.59	1864	5.14	1807	4.86	1754	5.57	2109	5.15	2017	5.22	2098	5.43	2235	5.38	2279
Mitchell	6.58	72	4.68	49	3.50	37	2.33	24	3.42	36	3.65	39	2.38	25	1.45	15	2.55	27	1.48	16
Montgomery	4.32	86	4.96	99	3.57	70	4.53	92	4.34	88	4.35	87	4.15	83	3.01	59	3.11	61	4.30	85
Moore	3.03	127	4.35	181	3.21	134	2.82	122	3.76	168	3.80	174	3.13	145	2.79	129	3.15	147	2.65	124
Nash-Rocky Mount							3.49	280	3.04	244	3.64	291	3.64	291	3.95	310	3.12	238	3.59	278
†Nash	3.40	188	3.90	215	3.62	197														
†Rocky Mount City	4.82	123	7.31	183	4.40	108														
New Hanover	7.48	715	6.02	559	5.29	486	4.07	383	4.05	390	4.36	429	4.65	460	3.80	372	3.69	363	5.23	523
Northampton	4.47	85	2.43	43	1.39	24	1.97	33	1.93	32	2.86	49	3.03	53	3.01	53	4.73	84	3.35	58
Onslow	4.97	387	4.70	370	3.81	303	3.04	247	2.70	227	2.06	181	2.73	252	2.37	221	1.84	172	2.00	189

**During the period when Alamance-Burlington, Iredell-Statesville, and Stanly were consolidating, data was reported two ways: as a consolidated system and as two separate systems.

•Consolidated into Iredell-Statesville

*Consolidated into Lenoir

†Consolidated into Nash-Rocky Mount

Ten Years of School System Data – Duplicated Grades 7-12

LEAs	'88 – '89		'89 – '90		'90 – '91		'91 – '92		'92 – '93		'93 – '94		'94 – '95		'95 – '96		'96 – '97		'97 – '98	
	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number
Orange	4.86	118	3.78	88	2.30	52	2.08	48	2.74	67	2.51	63	4.01	102	2.90	73	3.27	84	2.43	63
Chapel Hill-Carrboro	1.73	46	1.89	51	0.98	27	0.72	21	0.84	26	1.83	61	1.85	65	1.03	37	0.87	32	0.87	33
Pamlico	2.51	24	1.80	17	2.34	22	2.82	27	2.93	29	1.39	14	2.24	23	2.40	24	2.21	21	2.57	24
Pasquotank	3.41	78	2.91	67	2.56	60	2.41	59	1.79	45	2.03	53	2.40	65	2.19	59	2.49	67	1.47	40
Pender	3.09	73	3.26	77	3.46	81	4.56	107	3.10	73	3.38	82	2.63	67	4.30	117	4.18	115	3.42	94
Perquimans	3.43	28	1.63	13	1.94	16	1.92	17	2.57	24	1.28	12	1.20	11	0.77	7	1.30	12	0.88	8
Person	2.09	54	2.72	69	2.48	62	1.63	40	3.32	83	4.33	109	3.88	96	3.40	83	3.11	76	3.26	81
Pitt	5.00	385	4.56	346	3.49	270	3.17	263	3.54	303	3.33	290	4.23	373	5.64	498	4.73	410	4.19	363
Polk	3.92	37	3.56	34	2.09	19	3.19	29	1.65	15	2.52	23	2.18	20	3.29	31	1.90	18	0.83	8
Randolph	6.98	439	6.81	423	4.81	295	4.50	286	4.86	314	6.58	441	5.60	374	4.92	327	4.14	279	4.10	283
Asheboro City	5.43	88	4.40	68	5.84	91	3.22	50	4.09	65	4.95	81	4.92	82	5.39	91	4.80	81	4.73	81
Richmond	6.08	244	5.48	215	3.95	153	2.63	100	2.66	101	2.96	112	3.06	115	2.87	104	2.39	84	2.07	72
Robeson	5.77	658	6.36	699	5.80	624	4.85	523	2.72	287	3.57	382	4.14	441	4.76	500	5.71	598	4.38	450
Rockingham							4.09	274	4.02	267	4.30	284	4.79	312	4.80	308	3.91	250	4.26	275
*Rockingham County	4.34	76	5.10	87	5.77	95														
*Eden City	5.80	111	5.71	109	4.89	91														
*Western Rockingham City	4.44	77	5.78	94	4.24	66														
*Reidsville City	4.92	84	7.29	127	5.55	91														
Rowan-Salisbury	5.61	427	5.04	373	3.71	274	3.85	301	4.02	324	3.56	295	4.15	359	4.83	427	4.92	441	4.21	378
Rutherford	4.37	206	3.82	177	2.53	115	3.28	152	3.57	165	3.15	145	4.61	215	3.95	179	3.61	160	3.68	163
Sampson	3.37	108	3.54	115	2.89	93	1.16	37	1.31	42	1.37	44	1.06	34	1.43	46	1.16	37	1.20	38
Clinton City	2.83	35	3.02	37	1.65	20	2.89	37	3.77	48	3.00	37	2.17	26	2.30	27	3.46	40	2.32	26
Scotland	7.64	269	5.48	186	4.85	163	4.23	151	3.71	130	4.44	156	5.27	187	4.70	160	4.96	163	3.97	125
**Stanly													1.97	83	3.14	134	2.04	87	2.09	92
•Stanly County	3.00	93	3.61	107	2.71	79	2.04	61	2.34	72	2.14	68	1.76	57						
•Albemarle City	5.23	51	4.07	40	4.58	44	3.34	32	2.52	24	2.73	26	2.68	26						

*Consolidated into Rockingham

**During the period when Alamance-Burlington, Iredell-Statesville, and Stanly were consolidating, data was reported two ways: as a consolidated system and as two separate systems.

•Consolidated into Stanly

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LEAs	'88 – '89		'89 – '90		'90 – '91		'91 – '92		'92 – '93		'93 – '94		'94 – '95		'95 – '96		'96 – '97		'97 – '98	
	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number
Stokes	5.16	164	6.53	200	4.71	142	3.72	110	5.86	175	4.29	128	6.42	201	4.32	133	4.20	130	3.11	97
Surry	4.69	179	3.67	138	3.31	121	2.87	104	3.38	123	3.64	134	4.81	178	5.74	212	5.25	191	3.72	132
Elkin City	3.96	19	1.72	8	1.49	7	1.55	7	2.73	13	2.17	11	3.29	17	1.55	8	1.77	9	2.89	14
Mount Airy City	4.49	40	6.09	55	3.47	32	4.34	40	4.29	39	1.85	16	2.21	19	2.07	17	1.75	14	2.28	19
Swain	6.61	55	4.76	39	2.62	22	4.65	38	1.76	14	3.02	24	5.00	40	6.61	53	3.24	25	6.31	51
Transylvania	2.97	59	3.64	70	2.59	49	2.33	43	2.58	47	3.84	71	3.20	59	3.10	57	2.94	54	3.55	66
Tyrrell	1.71	6	1.56	5	2.35	8	2.66	9	1.14	4	2.71	10	2.36	9	2.09	8	0.81	3	3.39	13
Union							3.53	259	3.30	251	3.17	245	3.28	260	2.59	208	2.33	191	2.50	213
*Monroe City	6.61	96	5.65	79	1.13	15														
*Union County	4.32	260	4.12	248	3.52	212														
Vance	5.18	180	5.13	171	5.16	167	3.89	130	4.52	150	5.51	182	4.77	153	6.42	200	5.27	159	4.50	138
Wake	4.97	1385	4.12	1142	3.71	1028	3.40	1049	3.62	1158	4.25	1417	3.76	1304	3.37	1203	2.76	1015	2.81	1079
Warren	3.91	56	4.52	66	3.08	45	3.77	57	4.31	66	4.63	70	3.88	58	5.73	87	5.77	86	4.26	62
Washington	2.04	28	2.52	34	0.86	12	1.33	18	1.42	19	1.74	23	1.55	20	2.23	28	1.47	18	1.53	18
Watauga	3.99	83	2.90	60	3.07	64	3.03	64	1.75	38	1.74	39	4.25	99	3.14	73	3.20	75	3.31	79
Wayne							2.00	168	2.53	215	2.84	242	2.73	235	2.97	256	3.47	300	3.67	322
†Goldsboro City	4.22	90	6.83	150	6.00	125														
†Wayne County	2.75	173	2.04	129	1.73	109														
Wilkes	7.20	359	7.00	333	5.59	261	4.56	215	4.68	220	5.75	272	5.66	265	4.89	225	5.08	233	5.17	237
Wilson	7.13	397	5.79	312	3.05	164	3.83	212	3.34	185	4.30	244	4.46	256	3.72	209	4.33	239	5.57	309
Yadkin	2.01	47	1.65	37	1.54	35	1.93	43	2.85	64	3.22	73	2.72	62	3.12	72	2.77	65	1.92	46
Yancey	4.03	52	3.80	47	3.62	44	3.31	39	4.50	53	4.09	47	2.84	32	5.15	59	4.37	49	4.20	47

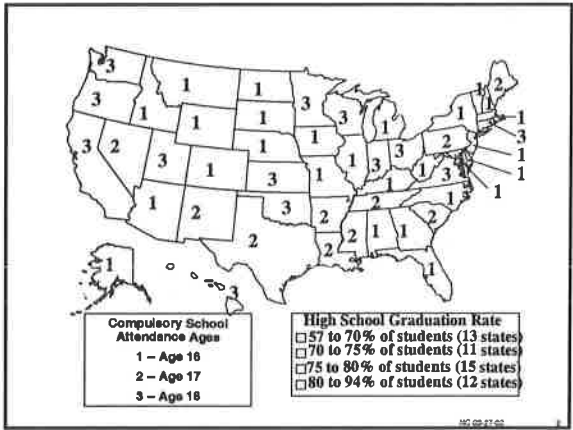
*Consolidated into Union
†Consolidated into Wayne

•See page 2 for thirteen years of rates and numbers for entire state, including 1998-1999, 1999-00, and 2000-01.

SREB Middle Grades - High School Improvement Efforts

Implications for Increasing High School Completion Rates

Southern Regional Education Board



Middle Grades - High School Transition

Grades 7 through 10

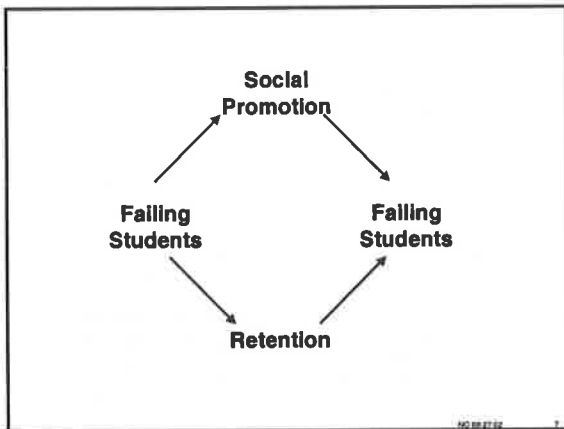
- Goals of Middle Grades - High School Transition**
- Leave grade eight ready for college-prep Algebra and English.
 - Pass ninth-grade courses.
 - Complete Algebra I, geometry, two-years college-prep English by end of grade 10.
 - Pass state exams.
 - Attend school regularly.

Number of Credits Earned in Ninth Grade

	North Carolina Schools	Network Schools
Three credits or fewer	26%	4%
Four credits	2	4
Five or more credits	72	92

When a High Percentage of Your Students Fail:

What to Do.



Retained students —

- Do less well than similar low-performing students who are promoted.
- Are 30-65% more likely to drop out.

“The research evidence is absolutely one-sided in finding negative effects from flunking students.”

Alternatives to Failure

Early Identification !!!

<u>Extra time</u>	<u>Extra help</u>
• After school	• Frequent assessment
• Saturdays	• Tutoring
• Summer school	• Small group instruction
• Modified schedule	• Reteach

Percentage of Ninth-grade Students Earning a D or an F in English Courses by Reading Achievement Quartile at End of Grade Eight

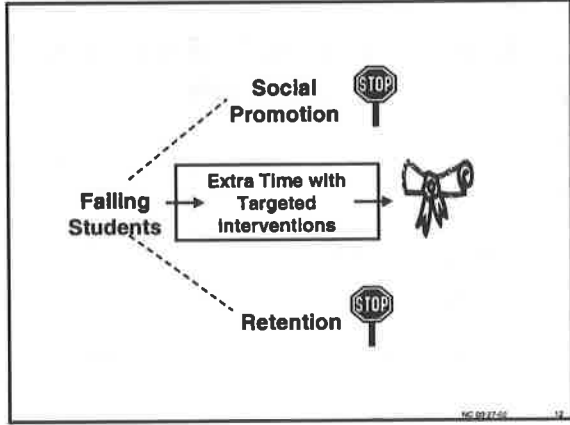
	Quartiles			
	Low 25%	2	3	Top 25%
College-prep English 9				
Number	62	119	179	326
Percent	23%	16%	10%	49%
Lower-level English 9				
Number	498	465	419	297
Percent	47%	31%	25%	8%

Source: 2001 Making Middle Grades Work Follow-Up Study

Percentage of Ninth-grade Students Earning a D or an F in Mathematics Courses by Mathematics Achievement Quartile at End of Grade Eight

	Quartiles			
	Low 25%	2	3	Top 25%
College-prep Mathematics				
Number	142	239	384	513
Percent	46%	31%	16%	9%
Lower-level Mathematics				
Number	421	336	239	120
Percent	42%	37%	25%	16%

Source: 2001 Making Middle Grades Work Follow-Up Study



Action for Improving Middle Grades - High School Transition

- Gear-up grades seven and eight
- Summer program between grades eight and nine
- Catch-up strategies grade nine
- Support classes
- Middle grades and high school teachers working together
- Require middle grades teachers to have a major or a minor in their teaching field

NC 02-27-02 11

1. States Set Goal of 85% of Students to Meet College Prep or Tech Prep Graduation Requirements

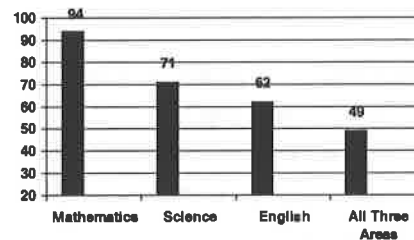
NC 02-27-02 11

Tech Prep-Recommended Curriculum

- 4 credits in college-preparatory/honors English
- At least 3 mathematics credits -- Algebra I and higher
- 3 credits in science, including 2 at the college-prep level
- 4 credits in a planned sequence of career and technical studies

NC 02-27-02 11

Percent of Students Completing All Three Academic Areas and Percent Completing Each Area



NC 02-27-02 11

Students Meeting HSTW Performance Goals in North Carolina Compared to All States

	North Carolina	All Sites	North Carolina African-American Ave. Score	Network African-American Ave. Score
Reading	62%	51%	276	265
Mathematics	70	61	296	287
Science	63	56	284	273

NC 02-27-02 11

The Amount of Certain Literacy Experiences Across the Curriculum and Average Reading Score

	Average Reading Score
Little literacy experience	276
Moderate literacy experience	284
Intensive literacy experience	294

NC 02-27-02 11

2. Increase Opportunities for Quality Vocational Studies

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State Actions for Increasing Opportunities for Quality Career Studies

Making the Senior Year Count

- Strengthen area vocational centers
- Create “choice” technical high schools
- Develop career academies
- Use dual-enrollment courses
- Locate high school programs on postsecondary campuses

State Actions for Increasing Opportunities for Quality Career Studies

Making the Senior Year Count

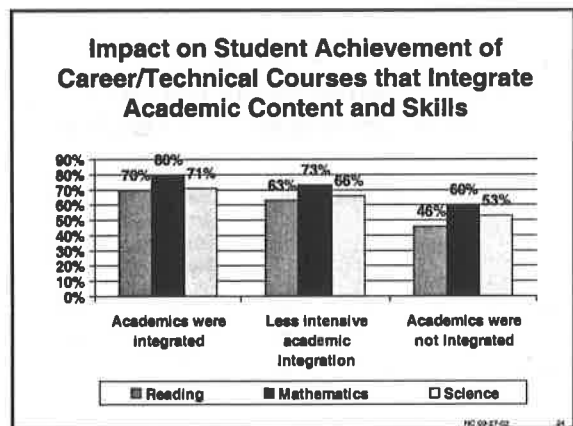
- Create a charter technical high school
- Create a virtual technical high school
- Strengthen work-based learning
- Fund new types of career/technical courses
- End the general track

3. Increasing Accountability for Learning Through Career/Technical Studies

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What Should States Expect Students to Learn Through Career/Technical Studies?

- Read, understand and communicate in the language of a career field
- Use mathematical skills, reasoning and understanding
- Understand technical concepts, principles and procedures
- Use basic technology



How Are States Assessing Student Achievement Through Career/Technical Studies?

- Thirteen *HSTW* states have an assessment effort
- Eight have state-developed exams
- Two use commercial exams
- Others have adopted industry certification exams

What Can States Do to Assess Student Learning?

- Make the exams count
- Use a combined strategy of adopting and developing exams

4. Rethinking What Vocational Teachers Need to Know and Do

What are shortcomings of the present system?

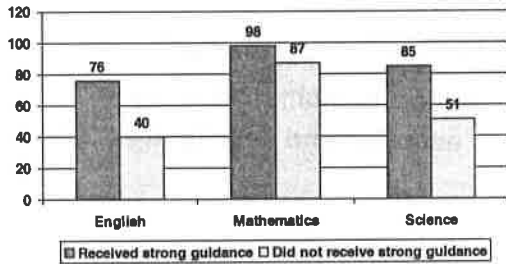
- Many career/technical teachers lack an adequate academic foundation.
- Some teachers do not have breadth and depth of technical knowledge.
- Most teachers are not prepared to integrate career/technical and academic content to advance achievement.

What Can States Do to Improve the Process?

- Develop modern standards for career/technical teachers.

5. Develop Policies That Require Schools to Provide Early and Continuing Guidance and Advisement Assistance to Students and Their Parents about Setting Post-High School Goals, Taking the Right Courses and Making Full Use of the Senior Year.

Impact of Strong Guidance on Completing the HSTW-Recommended Curriculum



Academic Core and a Concentration Matter Make the Senior Year Count

	%	Reading Mean	Math Mean	Science Mean
Math/science	7	307**	333**	325*
Academic core	22	281*	302*	288
Basic college prep	3	272*	298*	291
Career focus/only	60	273*	291	278
No academic core/ no career	8	241	287	263

Slide 1

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North Carolina Dropouts:
Defining the Problem

National and Regional Trends

- No significant improvement
- Changing demographics
- Remediation rates

Methods of Measure

- Graduation rates
- Disaggregation

Slide 2

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The National Marketplace

1950

- Professional - 20%
- Skilled - 20%
- Unskilled - 60%

2000

- Professional - 20%
- Skilled - 65%
- Unskilled - 15%

Slide 3

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The Marketplace (continued)

- NC Manufacturing
 - 2nd nationally in "value-added"
 - 43rd in wages
- Engineering
 - 2000 US graduates - 83,000
 - 2000 work visas - 150,000

Slide 4

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Who Drops Out?

- Those who repeat at least one grade
- Single parent/low income
- Siblings who dropped out
- Hispanic
- *Students that fail end of course tests.*

to be first last students.
first names

Slide 5

SREB Southern Regional Education Board	Compulsory Attendance - 18
	<i>Implement effective alternatives</i> <ul style="list-style-type: none">• GED - improved but not "equivalent" - adult literacy• Technical high school centers• Community colleges• Concurrent enrollment• Truancy reform - courts

Slide 6

SREB Southern Regional Education Board	Transform High Schools and Middle Schools
	<ul style="list-style-type: none">• Eliminate "multiple tracks" of diplomas• Eliminate low-level coursework• Strengthen the senior year• Extra "prep" year for those behind• Effective advising for parents and students

Reduce four "multiple tracks" of diplomas to two

out of knowledge for short algorithm not needed

Slide 7

<p style="font-size: 24pt; margin: 0;">SREB</p> <p style="font-size: 8pt; margin: 10px 0 0 0;">Southern Regional Education Board</p>	<p>State Actions</p>
	<p><i>“Comprehensive” approach</i></p> <ul style="list-style-type: none"> • Consistent with standards - and end-of-course testing • Eliminate the graduation “exam” • Phased in over time • Fully integrated with accountability • Firm and accurate definitions • State-level student information • Early identification

Slide 8

<p style="font-size: 24pt; margin: 0;">SREB</p> <p style="font-size: 8pt; margin: 10px 0 0 0;">Southern Regional Education Board</p>	<p>State Actions (continued)</p>
	<ul style="list-style-type: none"> • Challenging vocational courses • Fund alternatives • Set achievable goals - 6% • Rewards and sanctions • Drivers license/work permits

Set achievable graduation rate goals - 94%

274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.

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State Actions

“Comprehensive” approach

- Alignment with with standards and end-of-course and end-of-program testing
- Eliminate the graduation “exam”
- Phased in over time
- Fully integrated with ABCs - including proper “weighting” of dropout trends
- Firm and accurate definitions

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State Actions (continued)

- State-level student information
- Early identification
- Challenging vocational courses
- Fund alternatives
- Set achievable graduation rate goals - 94%
- Rewards and sanctions
- Drivers license/work permits

Teachers face tougher task than public understands

By Joseph Reynolds

When I announced that I was leaving a successful 25-year career as an attorney to teach high school history, some said I was crazy. Others said they dreamed of doing the same someday.

I remembered teachers who influenced my life, and I hoped I could help. As it turned out, I didn't last. But I learned in the process that the public has a grossly inaccurate picture of teaching, and if we want to get and keep good teachers, we need to make some practical changes.

First, the public's misperception. As former students, we all have firsthand knowledge of the education system. So we think we're experts on good teaching. But that's like thinking that because we know how to eat, we can cook.

We also tend to see teaching as a cushy job. Teachers can go home in the middle of the afternoon and receive generous time off, including summers and holidays.

In reality, the demands of teaching are daunting, especially for a new teacher:

► **Keeping up to date is a challenge.** Even though I have a master's in history and read a lot, this took a great deal of time. Teachers' days may look short — and, in fact, for some, they may be short — but for the good ones, simply keeping in step with the latest knowledge eats countless hours outside the classroom.

► **One size doesn't fit all.** I had to create lessons for students who learn in different ways and start from different backgrounds. There are seven or eight different styles of learning. Not every one can listen and learn or look and learn. I also had to provide accommodations for kids with special needs, both physical and emotional, in diverse classrooms where cultural and social backgrounds varied widely.

► **There's more to it than teaching from textbooks.** I was expected to maintain order and teach ethics, critical thinking, writing and manners — as well as teach during unexpected crises such as 9/11. I was also expected to control gum chewing and talking.

► **Conditions are challenging.** All of this was to be done in a classroom with 26-29 kids. Oh, yes; the classroom was not in a building but in a "learning cottage" (trailer).

► **Grading absorbs free time.** If I assigned my students a paper to write, I had to grade 120 papers. (I

had 140 students; about 20 could be expected to ignore the assignment.) At 20 minutes per paper, that's about 40 hours of work. Even a quiz that takes a minute to grade eats up two hours. Think about a test with essay questions.

► **Did I mention the administrative tasks?** There's attendance and paperwork, the individual education plans, the team, department and faculty meetings, and so forth. It is simply not possible for teachers to accomplish all of the tasks we ask of them. It drives me crazy to hear people say, "Those who can, do; those who can't, teach."

Teachers are retiring, and new ones are needed. If we want to get and keep good teachers, we need to acknowledge the workload and find creative ways to help novices:

► **Use the knowledge of successful veteran teachers.** Schools need to find ways to provide new teachers with access to the vast resources created by experienced teachers. Find those model teachers and have them share their creative teaching methods and the teaching tools they developed. Some mentoring is done now, but expand it by giving mentors the compensated time to teach new teachers.

► **Expect less of new teachers.** I know that sounds objectionable, but new teachers are paid less. With my master's (the law degree didn't count), I made \$34,069. A 20-year veteran would make \$69,734. New teachers need the additional time to build the material and skills necessary to be successful. Let them build up to a full workload over time. I didn't have big cases as a first-year lawyer.

► **Give them the tools to succeed.** Too often, the most junior new teachers get the worst equipment and facilities; many don't even have a home classroom in which to organize their lessons. Yet of all instructors, they need the most and are the least able to adapt successfully.

Although my teaching tenure was brief, I hope what I learned from the experience can help others who choose to follow the same path someday. If we can help these new teachers succeed, not only will they gain from the experience, but so will our children.

After a half year of 14-hour days as a teacher, Joseph Reynolds returned to the law firm of Nixon Peabody LLP. He still hopes to find a less life-consuming way to be a teacher.

March 13, 2002
Gretchen M. Bataille, Senior Vice President for Academic Affairs
University of North Carolina

House Bill 1246—Interim Report

House Bill 1246 directed the Board of Governors to work with the State Board of Education and the State Board of Community Colleges to study the measures used for admissions, placement, and advanced placement decisions by the University of North Carolina. This presentation is in response to the requirement that we provide an interim report. We have submitted a written report, and you have a copy. This morning I would like to provide a state and national context for the study.

The committee established to study this issue has met twice and will meet again on March 14 (tomorrow). Committee members were selected for their knowledge of the issues and their role in the current process that leads to admission to the constituent institutions of the University of North Carolina. Dr. Bobby Kanoy, Associate Vice President for Academic Affairs and responsible for access and outreach, chairs the committee and is with me here today. Dr. Kanoy is responsible for CFNC, Pathways, GEAR-UP, and the Transfer Advisory Committee and meets regularly with the sixteen admissions directors and enrollment managers. Other committee members are responsible for data collection for UNC, the Community Colleges, and DPI; understand assessment; or are directly involved at the campus level. Two members are responsible for enrollment planning and admissions and are from NCSU and NCA&TSU.

This group is currently in the process of determining what data are already available within our respective systems, studying how to assess these data, and studying what is being done elsewhere that can assist them in the study.

Here is some of what the committee has determined regarding the UNC process. UNC currently uses GPA (Grade Point Average) in high school, weighted GPA (Grade Point Average adjusted to account for honors, AP, and IB courses), class rank, courses taken, SAT scores, ACT scores (as an additional measure if submitted), interviews, essays (required by three universities and optional elsewhere), MCR (Minimum Course Requirements), portfolios (NCSA) and auditions (NCSA). In addition, every campus accommodates those students who need exceptions because of non-public school attendance or home schooling. The Committee is collecting all of the details of these requirements as a place to begin assessing the formulas and instruments used for placement. At the same time, DPI is determining what data sets are available on end-of-course and end-of-grade tests. In the area of placement, the committee is collecting information on the established minimum scores for AP and IB tests for students to receive college credit. These scores are established by the faculty at each institution based on the expectations for content mastered in equivalent university courses. Placement for remediation is another aspect of the study, and the campuses are providing information on the measurement tools being used. It is significant that the percent of students needing remediation has declined since the 1990 MCR requirements went into place and we expect from previous data that the new MCR and the accompanying realignment in the high school curriculum will have a further positive effect in this area.

Let's turn now to the national context. The debate about the use of SAT scores in college admissions decisions has shifted. For the past 20 years critics have maintained that the test discriminated against female and minority students. In response, the College Board has sponsored several studies that showed the test over predicts college

performance of black and Hispanic students. However, the current debate is focused on the use of the SAT to measure students' ability to learn. While the College Board has tried to distance the SAT from the IQ test genre, the perception remains that it is a measure of intelligence, not a mastery of learning. Critics argue that if college entrance exams were more closely tied to the high school curriculum, students would have a clear idea of what standards they must meet, and high schools could more easily be held accountable when students fail.

During the 1940s, the University of California (UC) was the first major public system of higher education to require the test. Ironically, last February, UC President Richard C. Atkinson recommended that the nine-campus, 170,000 student system become the first public system with competitive admissions to drop the requirement that applicants take the SAT. Instead, Atkinson proposed that the university should use tests that assess students' mastery of core subject content rather than evaluating students on undefined measures of aptitude or intelligence. Atkinson called for the development of new standardized tests that are more closely linked to the high school curriculum; in the interim UC would continue to use the SAT II achievement tests. The proposal continues to be under review and no changes in UC's existing test requirements will be implemented for students applying for fall 2002 admission.

Yesterday, March 12, a new chapter was added to the UC saga. A faculty committee presented a proposal to the Board of Regents to eliminate the use of the SAT by 2006. In its place, the committee suggested a new three-hour core exam that would be based on a college-preparatory high school curriculum. The exam would include a

writing test as well as subject exams. This proposal will continue to be discussed by the Regents with the expectation that there will be a vote in July.

Many large public universities, which have historically made admissions decisions based on a formula rather than a subjective reading of each application, have preserved enrollments of black and Hispanic students by giving them an explicit bonus in the process. However, in several high-profile legal decisions (including a ruling by a federal appeals court that struck down the admissions process at the University of Georgia) these preferences have been successfully challenged as unconstitutional by white students who were denied admission. As a result, many believe that colleges will move to a more holistic set of criteria that recognize a wider range of achievement, such as leadership and overcoming adversity. In fact, the Board of Regents at the University of California will soon consider whether to establish such a review. If adopted, the "Comprehensive Review" would require admissions officers at the system's campuses to evaluate every student on a broad array of criteria, including initiative and hardship. UNC-Chapel Hill, and Virginia officials have been reading every admissions folder for decades, and Berkeley admissions personnel started reading all applications last year. Recently, this approach has been challenged by critics of every race who argue that college admission should not be based on having had a dysfunctional childhood or difficult family life.

In the late 1990s, some states facing bans on affirmative action have sought ways to ensure their public campuses remained racially diverse. California, Florida, and Texas now automatically admit large numbers of students based solely on class rank, essentially making SAT scores irrelevant. Texas' public colleges began guaranteeing spots for the

top 10 percent of the state's high school classes in 1997, and California and Florida followed in 1999, holding seats for the top 4 percent and 20 percent, respectively. The policies take advantage of the many high schools that are predominantly black or Hispanic. The University of Texas at Austin is now considering whether the SAT is even worth requiring for the half of the freshman class not in the state's 10 percent policy. These approaches are also being challenged.

College officials elsewhere expect legislation similar to the North Carolina legislative mandate to study the use of the SAT in admissions decisions, and a number of studies are currently underway. For example, The Association of American Universities, a group of research institutions, is coordinating a project, sponsored by thirteen research universities, to help states design better tests by agreeing on a set of skills needed by freshmen at their institutions. In addition, a data base of current state tests will be created so that colleges can compare scores on tests in different states if they choose to use them in admissions decisions. Furthermore, thirteen top colleges, including Harvard University, the Massachusetts Institute of Technology, and the University of Michigan at Ann Arbor, are participating in a study to determine if state exams already given to high-school students may be used to replace the SAT in college admissions.

In states with high school exit examinations or end-of-course tests, such as North Carolina, the ability to use such records is also being examined. It is fair to say that North Carolina is in the forefront in many ways. Our public schools have used testing longer than other states, but last year's entering freshman class was the first to have three consecutive years of end-of-course exams. We recognize the difficulties of ensuring across-the-board quality and consistency and must ensure that the measures are

predictable of success. Equally important is that whatever combination of predictors are used, they must result in equitable and fair treatment of all students. Our goal must be to use admissions criteria that expand access and not to restrict access to UNC campuses.

This study will provide us with an inventory of what data are available and will lead to meaningful examination and potential change in the process used to determine admission requirements.

The final report is due December 2003.

Using Industry Certification Exams to Assess Learning in High Schools Career and Technical Studies: *Virginia's Approach*

The State Board of Education in Virginia has approved 63 industry certification exams for more than 75 different career and technical education courses and/or course combinations. These approved industry certification exams can be used for awarding student-selected verified credit, and they can be used for earning a career and technical education seal on students' high school diplomas.

Students in Virginia earn two types of credit during high school. Standard credit is based on a minimum of 140 clock hours of instructions and successful completion of the course. Verified credit is based on standard credit plus a passing score on the end-of-course standards of learning tests or other board-approved substitute tests. To be eligible for the standard diploma, students must earn six verified credits, and one of those credits can be earned in a career and technical concentration or specialization by passing an industry certification exam approved by the state board. For Virginia's advanced studies diploma, students must earn nine verified credits, and again, one of those verified credits in a career and technical course may be earned by passing an industry certification exam approved by the state board.

For students to earn verified credit in career and technical education they must

- be eligible for a standard or advanced studies diploma;
- successfully complete a course sequence that prepares for a board-approved industry certification or state licensing exam; and
- successfully complete the test required by the certified or licensed agent.

The Virginia State Board of Education has created two diploma seals of achievement. One is a career and technical education seal, and the other is an advanced mathematics and technology seal. For students to earn a career and technical education seal, they must meet the following requirements:

- fulfill requirements for either a standard or advanced diploma;
- complete a prescribed sequence of courses in a career and technical education concentration or specialization; and
- maintain a B or better grade in CTE courses, pass a board approved industry certification exam, or acquire a professional license in a CTE field.

For career and technical students to earn an advanced mathematics and technology seal, they must fulfill the requirements for either a standard or an advanced diploma and

- satisfy all mathematics requirements for the advanced studies diploma with a B average or better and pass an exam that confers board-approved industry certification in information technology, or
- pass a board-approved exam that confers college-level credit in a technology or computer science area.

In identifying the approved industry certification exams, the state approved only those exams that meet the following criteria:

- They are standardized and graded independent of the school in which the test is given.
- They are knowledge-based, as opposed to performance-based.
- They are administered on a multistate or international basis.
- They must be in a career and technical education concentration or specialization that confers certification from a

recognized industry, trade or professional association.

Students who seek verified credit based on completing a career and technical sequence through an industry certification exam must be enrolled in a career and technical program in which the teacher has been certified by the industry. To provide more career and technical programs and give teachers the opportunity to meet industry certification standards, the Virginia Department of Education has provided more than \$330,000 to be matched by local funds. One hundred and sixty-one matching grants have been awarded to 49 of the state's 134 school divisions and to four of nine regional career and technical centers.

The state of Virginia believes the industry certification exams offer several benefits to students:

- evidence that the student has completed advanced educational preparation,
- increased job opportunities for advancement in a career pathway, and
- increased self-confidence and self-worth for students because they have obtained a standard recognized by industry, professional or trade associations.

Virginia believes that the industry certification exams also have several benefits to the Commonwealth of Virginia.

They provide tangible evidence to current employers as well as to potential employers that the state has a competitive, highly skilled workforce. They provide a foundation for greater industry support for those programs that link solid academic studies with a career focus.

A major shortcoming of the industry certification exam is that only 22 percent of Virginia students are enrolled in courses with the potential for industry certification, and presently, students completing such programs take the exam at their own choosing. The present policies do not result in the certification exams being used as an accountability tool to determine the effectiveness of a school's career and technical program in a given area. At present, 722 career and technical teachers out of more than 8,000 are either working towards getting their program and themselves industry certified, or they have met the industry certification requirements. This leaves 78 percent of career and technical students in 2000-2001 who were enrolled in high school career and technical programs where an industry certification does not exist.

What does Virginia plan to do to require all programs to eventually meet industry certification standards and to have teachers who have been certified based on industry or some other acceptable type of certification exams. When will the state even-

tually discontinue programs that fail to meet industry certification and who have teachers who have not passed industry certifying exams or other acceptable alternatives? To address both of these issues, Virginia will continue to offer incentive grants to local school divisions to get teachers and their programs certified in approved industry certifications. The state will also continue to push the career and technical seals of achievement on diplomas. The Virginia Association of Career and Technical Educators is promoting legislation that provides state tests in career and technical education for those areas where industry certification does not exist. Ideally, the Board of Education will require industry certification or the state tests, but the current policies have only been effect for a short period. There is not yet sufficient data to warrant such a requirement at this time.

Attached to this report is a list of the certification and licensing exams approved for the students' selective verification career of choice, September 5, 2001.



SREB

A Strategy for Using Web-based Career and Technical Courses Offered at Community/Technical Colleges in SREB States

Finding ways to maximize and share resources to provide students increased access to quality career/technical studies is an important goal. One of the problems many high school career/technical studies students encounter is limited access to a broad range of quality courses. Students often must choose from limited available local options and may be forced to choose courses that are not their first choice simply to fill their course schedule. One approach to expanding student options and to providing increased access to a variety of courses is to tap the growing number of courses available via the Web. Offering suitable Web-based courses would greatly expand student access to quality career/technical studies in ways that may be cost effective for both the course provider and the student.

A possible vehicle exists that can provide access to such options: SREB's Electronic Campus. In researching Web-based career and technical courses offered through the Electronic Campus, SREB found 37 career concentrations that could possibly be made available to high school students through special arrangements with career/technical colleges. These 37 career concentrations have been organized around the 16 U.S. Department of Education career clusters (see listing on next page).

Each concentration is made up of four suggested courses and two related courses found on the community and technical college list of available Web courses for SREB's Electronic Campus as of September 2001. Additional courses have been included from Piedmont Technical College (South Carolina) and from Georgia's Virtual Technical College, both of which were available as of October 2001. Many of the courses are offered by several of the community and technical colleges across SREB's 16 member states.

Does SREB's Electronic Campus, working with its participating two-year institutions, provide a realistic opportunity to expand student options? We believe so, but a number of conditions are needed to effectively use Web-based courses for high school students. While the following list is not exhaustive, it does suggest the type of thinking needed to determine if Web-based courses, such as those listed here, have potential for high school students.

- A responsible facilitating teacher would be needed for Web-based instruction to
 - assist students, check their work and keep them on schedule in terms of course completion;
 - supplement Web-based instruction with opportunities for students to connect course content with real-world tasks and problems;
 - arrange for student internships with local employers to provide experiences aligned to the Web-based course content; and
 - assist students in designing a hands-on project that requires them to apply what they are learning in the course to actual real-world problems/experiences.
- Students who participate in Web-based instruction would need a sufficient level of academic achievement and computer literacy, and there would need to be a system for measuring this achievement.
- A system for measuring course quality would also be needed, along with established administrative procedures and whatever additional local resources might be needed.

Much work needs to be done before the courses listed are deemed suitable for high school students. Even more work is needed to determine if these and other courses could form the basis of a Virtual Technical High School.

For any states interested in exploring such options, SREB is willing to convene a study group for this purpose, along with state career/technical coordinators.

Southern
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Education
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Career Concentrations

1) Agriculture and Natural Resources

a) Environmental Science/Water Conservation

- Energy in the Natural Environment
- Water Resource Technology
- Water Purification
- Wastewater Treatment and Plant Operation
 - (1) Sanitary and Biological Chemistry I
 - (2) Fluid Mechanics and Hydraulics

b) Turf Management

- Concepts of Turf Management
- Pest Management
- Horticulture Science
- Nursery Production
 - (1) Environmental Microbiology
 - (2) Principles of Marketing

c) Forestry

- General Botany
- Forest Safety and Orientation
- Introduction to Fire Science
- Introduction to Hardwood Grading
 - (1) Principles of Geography and Conservation
 - (2) Dendrology

2) Architecture and Construction

a) Construction Occupations

- Blueprint Reading
- Direct Current Circuits I Online
- Alternating Current Circuits I Online
- Occupational Safety/Engineering
 - (1) Introduction to Engineering
 - (2) Fluid Mechanics and Hydraulic

3) Arts, Audio/Video Technology and Communications

a) Oral and Telecommunications

- Communications I
- Fundamentals of Oral Communication
- Introduction to Theater
- Introduction to Broadcasting
 - (1) Introduction to Mass Communication
 - (2) Advertising

b) Graphics and Telecommunications

- Communications I
- Technical Communications
- Writing for Magazines
- Advertising
 - (1) Multimedia Production
 - (2) Introduction to Mass Communication

4) Business and Administration

a) Human Resources Administrator

- Human Resources Manager
- Principles of Management
- Organizational Behavior
- Applied Management Principles
 - (1) Business Law
 - (2) Business Organizations

b) Financial Analyst

- Money and Banking
- Business Statistics
- Financial Accounting
- Income Taxation
 - (1) Business Law
 - (2) Auditing

c) Accountant

- Introduction to Business
- Principles of Accounting
- Business Statistics
- Cost Accounting
 - (1) Business Law
 - (2) Auditing

d) Entrepreneur

- Principles of Marketing
- Entrepreneurship
- Customer Service Principles
- Advertising and Sales Promotion
 - (1) Business Ethics
 - (2) Small Business Management

e) International Trade Manager

- Business Communications
- Introduction to International Business
- Business Law
- Principles of E-Commerce
 - (1) Applied Management Principles
 - (2) International Relations

5) Education and Training

a) Teacher

- Introduction to Education
- Introduction to Child Development
- Fundamentals of Oral Communication
- Curriculum Planning
 - (1) Library Skills and Research
 - (2) Special Topics in Education

6) Finance

a) Banking and Finance

- Introduction to Business
- Money and Banking
- Principles of Accounting
- Business Law
 - (1) E-Business Security
 - (2) Auditing

- b) **Financial Planning**
 - Financial Accounting
 - Customer Service Principles
 - Financial Management
 - Business Law
 - (1) Business Ethics
 - (2) Principles of Accounting
- 7) **Government and Public Administration**
 - a) **City Manager and Public Policy Administration**
 - Management of a Modern City
 - Community Policing
 - Professional Responsibility
 - Juvenile Delinquency
 - (1) Ethics of Community Relations
 - (2) Survey of Criminology
- 8) **Health Sciences**
 - a) **Health Care Science**
 - Personal and Community Health
 - Anatomy and Physiology
 - Medical Terminology
 - Introduction to Clinical Research
 - (1) Principles of Nutrition and Human Development
 - (2) Medical Law and Ethics
 - b) **Medical Records Management**
 - ✓ Medical Terminology
 - Clinical Terminology
 - Medical Records Transcription Applications I
 - Medical Insurance
 - (3) First Aid and Safety
 - (4) Pharmacology
 - c) **Radiation Protection Technician**
 - Introduction to Radiation Protection Technology
 - Print Reading for Radiation Technicians
 - Radiological Instrumentation
 - Radiation Physics I
 - (1) Environmental Radioactivity
 - (2) Radioactive Waste Management and Control
 - d) **Community Health Technician**
 - Personal and Community Health
 - Components of Personal Fitness and Wellness
 - Principles of Nutrition and Human Development
 - Child Health and Nutrition
 - (1) Medical Insurance
 - (2) Management of Health Care Organizations
- 9) **Hospitality and Tourism**
 - a) **Lodging Manager**
 - Business Communications
- Customer Service Principles
 - Small Business Management
 - Principles of Management
 - (1) Human Resource Manager
 - (2) Business Law
- b) **Travel and Tourism**
 - Economics of Travel and Tourism
 - ✓ Destinations and Geography
 - Writing for Magazines
 - Marketing and Advertising
 - (1) Multimedia Production
 - (2) Fundamentals of Oral Communication
- 10) **Human Services**
 - a) **Child Care Worker**
 - Introduction to Psychology
 - Child Growth and Development
 - Child Psychology
 - Adolescent Psychology
 - (1) Sports Psychology
 - (2) Psychology of Personal Effectiveness
 - b) **Psychologist**
 - Introduction to Psychology
 - Introduction to Abnormal Psychology
 - Developmental Psychology
 - Psychology of Personal Effectiveness
 - (1) Sports Psychology
 - (2) Psychology of Death and Dying
- 11) **Information Technology**
 - a) **Software Engineer**
 - Introduction to Distance Learning
 - Computer and Information Technology
 - Software Installation and Maintenance
 - Program Analysis and Design
 - (1) Introductory Programming
 - (2) Trends in Technology
 - b) **Web Designer/Developer**
 - Introduction to Web Page Development
 - Electronic Commerce
 - Web Page Development
 - Advanced World Wide Web Development
 - (1) Telecommunications Theory
 - (2) Systems Analysis and Design
 - c) **Database Manager**
 - Computer Concepts Online
 - Database Concepts and Applications
 - Personal Computer Database Management Systems
 - Information Center Management
 - (1) Presentation Software: PowerPoint 2000
 - (2) Administration of Local Area Networks

12) Law and Public Safety

a) Fire Fighter

- Introduction to Fire Safety
- Fire Officer Leadership
- Developing Fire and Life Safety Strategies
- Fire Officer Mid-level Management
 - (1) First Aid and Safety
 - (2) Hazardous Materials and Team Operations I

b) Police Officer

- Introduction to Criminal Justice
- Criminology
- Juvenile Justice
- Law Enforcement Operations
 - (1) Constitutional Law
 - (2) Police Organization and Administration

c) Paralegal

- ✓ ▪ Introduction to Paralegal Studies
- ✓ ▪ Introduction to Law and the Legal Assistant
- Legal Writing
- Criminal Law and Procedures
 - (1) Bankruptcy
 - (2) Family Law

13) Manufacturing

a) Machinist/Manufacturing Engineer

- ✓ ▪ Engineering Graphics
- ✓ ▪ Introduction to Engineering
- Engineering Mechanics—Statics
- Introduction to AutoCAD
 - (1) Basic Electric Circuits I
 - (2) Fundamentals of Geometric Designs and Tolerances

b) Automated Process Technician

- Engineering Graphics
- DC and AC Fundamentals I
- Digital Electronics Online
- Linear Integrated Circuits
 - (1) Solid State Devices III
 - (2) Programmable Logic Controllers

c) Production Technician

- Engineering Graphics
- Introduction to Engineering
- Basic Electric Circuits I
- Introduction to Electronic Technology
 - (1) Introduction to Quality Assurance
 - (2) Industrial Instrumentation

14) Retail/Wholesale Sales and Services

a) Sales Associate

- Business Communications
- Principles of Selling
- Advertising, Sales and Promotion
- Psychology of Personal Effectiveness
 - (1) Customer Service Principles
 - (2) Business Ethics

b) Marketing Director

- Principles of Marketing
- Advertising
- Principles of E-Communication
- Business Law
 - (1) Principles of Management
 - (2) Organizational Behavior

15) Scientific Research and Engineering

a) Chemical Engineer

- ✓ ▪ College Chemistry I
- ✓ ▪ Introduction to Engineering
- ✓ ▪ Sanitation and Biological Chemistry I
- Fundamentals of Electricity
 - (1) Fluid Mechanics and Hydraulics
 - (2) Hazardous Waste Safety

b) Electrical Engineer

- Direct Current Circuits II Online
- Alternating Current Circuits II Online
- Engineering Graphics
- Digital Electronics Online
 - (1) Solid State Devices I Online
 - (2) Occupational Safety and Engineering

16) Transportation, Distribution and Logistics

a) Warehouse Manager

- Introduction to Business
- Materials Management
- Business Law
- Operations Management
 - (1) Financial Accounting
 - (2) Principals of Supervision

SREB

Funding Vocational Education:

An Analysis of State Approaches and Funding Levels for Vocational Education Among SREB Network States

A Report Prepared for
The Southern Regional Education Board-
State Vocational Education Consortium

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Introduction

It is generally accepted in the education community that vocational education is more expensive to provide than other forms of instruction. To offset this increased cost, states participating in the Southern Regional Education Board–State Vocational Education Consortium *High Schools That Work* (HSTW) network have developed a number of strategies for allocating state resources for vocational education. These approaches generally condition state aid on the number of students or teachers participating in vocational education or the added costs that districts incur in providing instruction.

Regardless of funding approach, not all states make similar financial commitments to vocational education. Allocation data collected from the 26 HSTW network states reveal considerable variation among states, with some allocating more than three times what others spend on a per student basis. Comparisons of state spending are complicated by a variety of factors, however, including differences in the geographical cost of living, organization of state education systems, and manner in which state funding formulas allocate resources. Furthermore, not all states classify their allocations for vocational education in similar ways, which can complicate interstate comparisons.

This paper is intended to offer state policymakers data that will help them make more informed decisions about vocational education funding. **Specifically, the paper seeks to answer a number of questions, including: What approaches are states presently using to fund vocational education? How do state allocations of general fund revenues differ? Is the amount of current state funding adequate to ensure that students have access to quality programs?**

The paper opens with a description of funding approaches across HSTW states to illustrate the range of formulas that states are using to support vocational education. Next, state levels of fiscal support are contrasted to assist state leaders in understanding how their funding commitment compares to that of other states. Analysis focuses primarily on the distribution of state general fund revenues designated for vocational purposes; state resources intended for other uses or originating from the federal government are excluded, even if used to support vocational instruction. The paper closes with a review of key factors that policymakers should consider when assessing whether their current level of state support is sufficient to ensure that students participating in vocational education have access to quality programs.

In addition to assessing the relative performance of their state funding system, state policymakers should also question whether they could make more effective use of their existing resources. Specifically, does the configuration of state vocational systems support state instructional goals or are there better strategies for organizing services? To what extent are educators working to consolidate vocational resources, for example arranging for jointly administered programs or for high school students to train at local community colleges? Do students have access to Tech-Prep programs and coursework that integrates academic and vocational concepts? Answering these questions will require that state legislatures undertake a systematic review of their policies governing vocational provision, in addition to the strategies used to fund services.

State Approaches to Funding Vocational Education

Higher costs associated with vocational education are usually ascribed to the unique resource demands of vocational classrooms, with the majority of these costs captured by three factors: the cost of salaries for vocational teachers; the smaller size of vocational classes; and the purchase of vocational equipment, supplies and instructional materials. To offset these additional costs, many states have modified their education funding formulas to channel additional resources for vocational instruction.

States participating in the *HSTW* network employ at least one of four strategies for distributing state general fund resources to support secondary vocational education offered in comprehensive high schools and/or area vocational centers: 1) foundation grants that do not differentiate between vocational and academic education, 2) unit cost funding based on the number of students or teachers participating in vocational instruction, 3) cost reimbursement for the added cost of vocational services, or 4) weighted adjustments for vocational students in the state allocation formula.¹

In many cases, states may combine two or more strategies for fund disbursement, for example, by allocating funding based on the number of vocational students enrolled in a district and including a categorical state grant for equipment purchase. Whether a state has multiple vocational delivery systems — comprehensive high schools and/or area vocational centers — can also affect state

¹ This paper does not address costs associated with constructing specialized vocational instructional facilities (i.e., area vocational schools) or vocational classrooms located in comprehensive high schools. These construction costs are typically funded by state appropriations that are not tied to annual district enrollments.

distributions. For the purposes of this study, greater emphasis is placed on quantifying state levels of vocational funding relative to other forms of instruction and in comparison to other states, than on detailing the multitude of channels by which vocational funds may be disbursed. Details on state funding systems can be found in the indicated matrices appended to the text.

Category I: Foundation Grants

State foundation grant programs ensure that all students in a state receive a minimum level of basic education services. Each year, states establish a threshold spending level for each student or instructor, often expressed in full-time equivalent (FTE) or average daily membership (ADM) units. This base level is subsequently adjusted to account for district attributes, which may include geographic cost differentials, local wealth or taxing capacity, and student characteristics or special needs. Districts receive an allocation based on the number and type of students they enroll or instructors that are employed, and have some level of flexibility in how they spend this money.

Of the 26 states participating in the *HSTW* network, four — Arkansas, Kentucky, New York and New Jersey — rely primarily on foundation grant funding to support vocational education offered in comprehensive high schools. In these states, school districts opting to offer vocational programs must fund these services out of their general state foundation grant, supplemented by federal and local resource contributions. To augment this funding, both Arkansas and New Jersey set aside a small amount of money for grants to local school districts that may be used at local discretion.

Given that school districts throughout each state have historically provided students with access to vocational services, the absence of supplemental funding has not eradicated vocational instruction. It is likely, however, that the scope and specificity of vocational studies offered in comprehensive high schools in these states are somewhat limited due to the relatively higher cost of staffing and equipping these programs.

To ensure that students have access to advanced vocational instruction, all four states also provide funding for the operation of stand-alone area vocational centers that provide shared, centralized services to participating school districts. Although the purpose of this funding varies among states, it is generally intended to offset capital and labor costs associated with vocational

provision. As Matrix 1 shows, state spending to support area vocational schools varied across these states in FY01, in part due to differences in the scale of the vocational enterprise.

Services need not suffer simply because a state does not specifically earmark funding for vocational education. When properly structured, foundation grant formulas can indirectly account for the average cost of providing vocational instruction within a state. For example, one non-*HSTW* state has recently adopted a cost-based grant model that takes into account approximately 25 instructional and operational cost components, including the average statewide cost of providing vocational education. As such, states that consider vocational costs when setting state foundation funding levels can be as likely to provide sufficient resources as those that explicitly budget for the purpose.

Category II: Unit Cost Funding

State legislators in the majority of *HSTW* states routinely allocate resources to support vocational education offered in comprehensive high schools along with area vocational schools. The amounts vary widely across states depending on several factors, including state economic conditions, the number of students participating in vocational programs, the number and type of local agencies offering services, historical funding precedent and the relationship of vocational education to other legislative priorities. Although these annual allocations may run into the hundreds of millions of dollars, state funding usually covers only a fraction of total spending on vocational instruction.

To allocate resources among local agencies, state administrators tailor their funding formulas to take into account district characteristics, such as the level of student participation in vocational education, the number of teachers engaged in instruction, or the overall costs incurred in providing services. States typically include some form of fiscal equalization factor in their formula to control for district wealth, and many have introduced other factors, such as program type, length of training, institutional size, or student participation or outcomes. Generally, local agencies have some flexibility in how they allocate funds generated by vocational sources.

Funding by FTE Student Participation

Four *HSTW* states condition the size of district allocations, in part or whole, on student participation in vocational programs. These states include Hawaii, Maryland, North Carolina and West Virginia. While the distribution mechanism differs slightly across states, state funds are typically appropriated via a state categorical grant and allocated based on the number of students participating in vocational education, adjusted to reflect an FTE or ADM basis (see Matrix 2).

Both Maryland and West Virginia allocate state resources to comprehensive high schools based solely on district FTE vocational enrollment, with each district qualifying for a proportional share of the total state funding allocated for vocational services. For example, a local education agency (LEA) that enrolls 5 percent of the state's FTE vocational students would be eligible to receive 5 percent of the state funds allocated for this purpose. In FY01, Maryland allocated \$3.9 million and West Virginia \$10.1 million for distribution based on state vocational FTE enrollment.

North Carolina and Hawaii allocate a large proportion of their state funding based on vocational FTE enrollment. However, both provide districts with a base level of support to help offset program operations. North Carolina, for example, provides each LEA with resources to cover 50 months of employment of vocational instructional or administrative personnel; remaining funds are distributed based on student ADM in grades 7–12. In addition, each district receives a base grant of \$10,000 plus \$25.97 per ADM in grades 7–12. Similarly, each comprehensive high school in Hawaii receives a base of \$20,000 regardless of the level of student participation in vocational education. Remaining resources from the \$2 million the state allocates for vocational education are distributed based on grades 9–12 FTE vocational student enrollment.

Allocating resources based on the level of student participation in vocational education can help concentrate funding in sites where student demand is greatest. Given that there is a fixed cost associated with offering particular types of vocational programs, smaller districts or those with more capital-intensive programs may be unable to support a wide range of services based on student participation alone; as such, states that provide districts with a base level of support in addition to a per-student allotment can help offset costs that all districts face in offering vocational services. **One drawback with funding based on student participation is that districts may have difficulty**

responding to fluctuations in student demographics, since district expenditures for staff and equipment are discrete and cannot be adjusted by fractional amounts to compensate for small enrollment changes.

Funding by Instructional Unit

Alabama, Delaware, Mississippi, Missouri, Oklahoma, Tennessee and Virginia base vocational funding on instructional units. Often, these units are calculated by dividing the total number of students participating in vocational education — often calculated on an FTE or ADM basis—by an average vocational class size specified by the state (see Matrix 3). In other cases, resources are simply assigned for each FTE vocational instructor identified by a district. Since average class sizes are often smaller for vocational education (due in part to the high cost of specialized instructional equipment and the potentially higher risk associated with equipment use), the number of students required to generate a vocational funding unit is often lower than for other types of instruction.

In Tennessee, for example, a district earns funding for a teacher's salary and expenses for each 26 general high school students and for each 20 vocational students enrolled. Districts also receive supplementary funding for the purchase of equipment and supplies: vocational students are funded at \$163 per FTE, versus \$47 for nonvocational students. Rather than rely on a single average class size to calculate instructional units for vocational programs, Virginia has specified unique student-to-teacher ratios — ranging from 15:1 to 21:1 — for differing vocational programs. The state also employs a cost reimbursement element to compensate districts for equipment, regional program staffing, and other indirect costs.

Alabama, Delaware and Mississippi calculate instructional units using the same formula for academic and vocational students, with the exception that vocational students are assigned a greater ADM weight. This means that a given number of vocational students will generate a greater number of instructional units than a similar number of academic students, with the size of this adjustment varying across states. For instance, Alabama allocates one instructional unit for every 18 ADM students in grades 9–12. However, since each vocational student is counted as 1.33 ADM, a vocational teacher unit is in effect generated for each 13.5 vocational students. Mississippi and Delaware, in contrast, provide add-on instructional units based on the number of students

participating in vocational programs. For example, in Mississippi an additional 0.5 teacher unit is added for each approved vocational program, with funding based on certification and experience of approved teachers.

Both Oklahoma and Missouri have developed quite complex funding strategies that differentially allocate resources to area vocational schools and comprehensive high schools based on the number of instructors. In addition to providing funding for supplies and equipment, each state has also pioneered strategies to allocate additional resources in support of vocational programs. Area technology centers in Oklahoma, for example, follow the state's Quality Foundation Formula, which stipulates the standard of instruction for all students and the cost of meeting these standards (\$118,359 per FTE program in FY01). In Missouri, incentive funding is awarded to districts based on the relative success of the agency in placing students into jobs and the responsiveness of a particular program to labor market supply and demand factors.

Instructor-based funding approaches can enable states to take into account the lower average class sizes often associated with vocational education. Since teacher salaries and benefits typically account for 80 percent of state education funding, states that adjust for the variation in class sizes between vocational and nonvocational teachers likely account for a large portion of the added cost associated with vocational education. Furthermore, states that provide additional funding for vocational equipment and supplies likely compensate districts for nearly all factors that contribute to the higher costs due to vocational education.

Category III: Cost Reimbursement

Idaho and Pennsylvania reimburse districts for all or a percentage of the costs associated with providing selected vocational services (see Matrix 4). Each year, districts in these states record their actual costs for vocational education programs and services, in some cases classifying these expenditures by purpose (e.g., salaries, equipment). State funding is intended to reimburse districts for the added cost of providing vocational services; costs associated with normal classroom instruction are not reimbursable.

In Idaho, districts apply for reimbursement of program-related costs associated with teacher salaries and benefits, professional development, contracted services, instructional equipment,

materials and supplies, basing their estimates on the prior year's data. Reimbursements are capped based on program area. In addition, state funding for professional-technical academies is provided based on student attendance, with an added cost of 0.33 per student in average daily attendance.

Funding for school districts in Pennsylvania is disbursed by a number of mechanisms, including a cost reimbursement weighted to account for the number of vocational students. A comprehensive high school district's resources are calculated by multiplying its vocational average daily membership by 0.17 and by the lesser of its actual instructional expenditures or base earned for reimbursement (for area vocational schools this adjustment is 0.21). Categorical funding is also provided to support equipment purchases and workforce development activities.

Knowing in advance the amount of funding for which they will be eligible helps local agencies set the level of vocational education they wish to offer, and insulates districts from fluctuations in student enrollment. The downside of cost reimbursement is that it can expose the state to some level of uncertainty in budgeting for vocational expenditures, since it may be difficult to predict changes in local spending. Local agencies may also have difficulties covering fixed costs if student populations change over time, and states may require greater oversight of local spending to ensure that vocational costs are classified appropriately.

Category IV: Weighted Funding

Weighted cost factors are used in state funding formulas to concentrate funding on vocational education. Weights function by mathematically inflating the number of FTE students participating in a vocational course or program area, increasing an agency's resource eligibility. States that use this approach include Florida, Georgia, Indiana, Kansas, Louisiana, Massachusetts, Ohio, South Carolina and Texas (see Matrix 5).

The typical formula involves either *add-on weights* or *vocational student weights*. A state using an add-on weight would multiply its base foundation level of funding allocated for all students by a fractional number for each student participating in vocational programs. In contrast, a state employing a vocational student weight would simply specify different weights for students participating in vocational and nonvocational programs. While the two forms of weighting are subtly different — one compensates for the added cost of providing services while the other for all costs of

educating a student — the effect is the same: youth enrolling in approved vocational programs qualify for more funding than those in other instructional areas.

Texas provides perhaps the clearest illustration of how vocational weighting formulas can operate. Within Texas, each FTE student in career/technology education — defined as 1,080 contact hours a year — generates a weight of 1.37. To calculate the amount of funding local agencies are eligible to receive, total student contact hours are multiplied by three factors: 0.95, the adjustment for student absences; \$2,537, the state basic allotment; and 1.37, the vocational student weight. District allocations are subsequently adjusted to account for geographic variation in known resource costs and to ensure equity for small and mid-sized districts.

South Carolina employs a similar formula, with the exception that each FTE student in vocational education generates a weight of 1.29, compared with 1.25 for other high school students. This means that vocational students generate roughly 3 percent more funding than nonvocational students. In Florida, this weight is 1.211 for vocational students versus 1.096 for nonvocational students, translating to roughly a 10.5 percent funding difference. Each vocational student in Kansas and Ohio gets an add-on weight of 0.5, and in Louisiana .05. Indiana has developed a complex system of add-on weighting that differentially funds vocational programs based on their cost.² For example, relatively more expensive programs, such as business education laboratory courses, are assigned an add-on cost of 0.33, compared with 0.19 for agriculture courses that meet one period per day; however, the funding base used for weighting purposes differs from the state per-student allocation.

Massachusetts has one of the more intricate weighting formulas for allocating vocational funds, in part because the state calculates resource eligibilities for 12 different student categories, of which vocational education is one. Funding levels are based on average statewide expenditures for at least 19 factors, including salaries, benefits, professional development, physical plant, equipment and supplies. State data for the 2000–2001 school year indicate that vocational education was 56 percent more expensive to provide than a general high school education. On average, Massachusetts high

² Beginning in the 2002–2003 school year, Indiana will implement a new, outcome-based system. Districts will earn \$550 for each student who receives a certificate of achievement in a technical field, \$1,000 for each student in programs linked to high-demand employment or labor market fields, \$700 for each student in moderate-demand fields, \$300 for each student in less-than-moderate-demand fields, and \$230 for each student enrolled in apprenticeship programs. Although the formula appears to represent a dramatic change in state funding, the amounts allocated for each outcome, as well as the outcomes themselves, are intended to keep overall district funding relatively constant.

school districts received \$5,449 for each FTE high student versus \$8,549 for each FTE vocational student.

Since vocational weights can be easily adjusted to reflect the actual costs states face in educating students, weighted funding formulas offer a fairly straightforward approach to financing vocational education. Moreover, since student weights can be modified to take into account the higher costs associated with different types of vocational programs, weighting can provide a state with a number of options in compensating districts. Another advantage is that, once weights are specified, districts are only required to quantify the number of students participating on a full-time basis in vocational programs, reducing bureaucratic record-keeping requirements.

Although many states do not adjust their weights annually, those that do track expenditures when setting weights can face an interesting challenge. The less money appropriated for vocational education, the less there is to spend, meaning the magnitude of the weight may decline in subsequent years. Moreover, districts that are successful in obtaining donated equipment and materials may spend less, again lowering the value of the weight.

In summary, it would appear that states participating in the *HSTW* network are employing a range of approaches for funding vocational education. While similarities exist across some states, variation in the amounts of resources appropriated for vocational education and the magnitude of formula adjustments can lead states to allocate different amounts in support of vocational programs. To quantify differences in state investment in vocational education, the following section reviews state fiscal data collected by MPR Associates as part of its 26-state survey.

State Funding Levels

There is no one preferred approach for funding vocational education or level of state expenditure that will guarantee all students have access to quality vocational programs. **A reasonable state funding formula is likely one that provides districts with sufficient resources to offer a breadth and depth of vocational coursework that aligns with state instructional goals, prepares students for a range of postsecondary education and career opportunities, and reinforces state workforce development priorities.** This section reviews spending levels across states to assist policymakers in understanding how their state funding commitment compares to that of other states. The section closes with some suggested strategies that state leaders may employ when assessing their own approaches for funding vocational education.

Statewide Spending for Education

State expenditures for K–12 education, calculated on a per-student basis, are one of the more commonly used measures for comparing state investments in public schooling. Nationwide, average expenditures per student in fall enrollment amounted to \$6,627 in the 1999-2000 school year (see Table 1). Statewide expenditures per student differed considerably among *HSTW* states, ranging from a high of \$9,797 per student in New York to \$4,605 per student in Mississippi. Among the 26 *HSTW* network states, eight states exceeded this national average spending level — New York, New Jersey, Massachusetts, West Virginia, Delaware, Pennsylvania, Maryland and Indiana. Since vocational education is included within these spending totals, vocational programs in these states may benefit from their states' comparatively higher level of investment.

One difficulty in comparing actual expenditures is that data do not reflect differences in the geographical cost of living, state and student demographics, organization of state education systems, or the quality of instruction that can affect education spending. The fact that New York spends 112 percent more than Mississippi to educate the average student, for example, does not take into account that the average annual teacher salary in New York is more than 78 percent higher than in Mississippi (NCES 1998). Other factors that can affect costs, such as the number of special need students enrolled or the average class size of academic and vocational classes, are also not factored into these cost figures. Consequently, it is difficult to assess whether differences among state funding levels are genuine or simply reflect the actual cost of educating students under different circumstances.

Even if it were possible to adjust for these conditions, the proportion of resources allocated for vocational education may vary across states. Thus, a relatively large, high-spending state like New Jersey may allocate a lesser share of its state resources for vocational education than a relatively small, lower-spending state, such as South Carolina. While overall spending patterns can provide some information on the relative magnitude of state spending, which may have implications for vocational education, additional information is needed to provide a more accurate picture of state investments.

Vocational Education's Share of State Revenues

Comparisons among states can be more meaningful when conflicting factors, such as geographical cost differences, are removed from the calculation. One means of doing so is to base analyses on the relative proportion of resources a state allocates to vocational education rather than on the actual dollar amount it provides. All things being equal, states should allocate a relatively similar proportion of general fund revenues in support of vocational instruction.

Overall state revenues appropriated for vocational education, expressed as a percentage of total state general fund allocations, can provide information on the relative share of state dollars applied for vocational purposes (see Table 2). **Based on a review of state spending, it appears that six HSTW states allocated more than 4 percent of their state revenues for vocational services, compared with 11 states that allocated less than 2 percent for vocational instruction.**

While it does not appear that any one funding strategy is associated with greater state expenditures for vocational education, states employing foundation funding or cost reimbursement strategies appear to allocate a relatively smaller proportion of resources for vocational education. This might be due in part to the manner in which resources are allocated and in part to differences in state funding levels. States that do not fund vocational coursework offered in comprehensive high schools, for example, might be expected to allocate relatively less funding, since resources are concentrated on a subset of the student population.

State bookkeeping can affect how much vocational funding appears to be allocated for vocational support. Some states classify vocational expenditures based on the additional cost of providing vocational services, while others include costs all expenditures associated with providing instruction.

Thus, states spending equal amounts to support vocational education will appear to spend differently if they apply different systems to classify expenditures. **Funds allocated for vocational education also need not be spent on vocational programs; in some states, LEA may reallocate vocational funds for use in other areas, even if funding is generated based on vocational student participation.** Moreover, states with greater numbers of students participating in vocational programs might be expected to generate proportionally larger resources for vocational instruction, also inflating state spending figures. **As such, while overall state expenditure data can provide some insight into state expenditures, differences in how funding is classified by the state can invalidate interstate comparisons.**

Relative State Spending for Vocational and Nonvocational Students

One means of controlling differences in the manner in which resources are allocated is to assess relative spending differentials within states for students participating in vocational versus other forms of instruction. Given regional cost of living differences, it is most useful to compare the relative size of per-student allocations for vocational and nonvocational students across states than the actual dollar amount spent. Unfortunately, expenditure data on state spending for vocational versus nonvocational students are available for only a subset of states, typically those using unit costs or weighted per student formulas to fund vocational education. States allocations on a per student basis — expressed in FTE or ADM basis — are arrayed in Table 3 for the 14 *HSTW* states for which comparable data exist.

Comparisons of average state allocations per FTE vocational and nonvocational student indicate that states concentrate anywhere from 1 percent to 57 percent more money on vocational students. Spending differences between student groups equaled or exceeded 20 percent in five states: Georgia, Kansas, Massachusetts, Ohio and Texas. In most cases, resource differences reflect the magnitude of the weight that the state assigns to vocational education. However, although weights for vocational students are also high in both South Carolina and Florida, these states weight nonvocational students at a level that effectively cancels out the higher vocational weight.³

³ South Carolina, for example, weights each vocational FTE student at 1.29 versus 1.25 for each regular high school student.

States spending relatively large amounts on vocational education are those that explicitly recognize the higher costs for providing vocational education. In the case of Massachusetts and Texas, higher weights assigned to vocational students are due, in part, to the fact that these states make some attempt to track the actual cost of providing vocational education and fund the system accordingly. Spending is also somewhat higher in states such as Mississippi, Virginia and Alabama, which adjust vocational instructional units to account for the relatively smaller class sizes that characterize instruction in these states.

While it would also be desirable to assess how vocational allocations per student compare in states employing other allocation strategies, the manner in which states disseminate resources or the availability of state data limit this opportunity. For now, we are left with the knowledge that most states allocate additional resources in support of vocational programs, but the total amount of this allocation is unknown.

Assessing Statewide Investment in Vocational Education

A review of state allocations for vocational education among the 26 *HSTW* network states indicates that a number of states appear to be making a relatively greater investment in vocational services. To compensate for the increase of educating a vocational student, five states — Massachusetts, Ohio, Texas, Georgia, and Kansas — weight FTE vocational students at a substantially higher rate than those participating in basic education programs. North Carolina also provides a relatively large allocation for distribution based on both teacher months of employment and level of student participation. Among states using vocational instructional units, two states — Oklahoma and Missouri — provide a relatively large allocation for vocational instruction, either because they adjust vocational class sizes to increase the number of instructional units generated by vocational students or because they provide additional resources to supplement district spending.

A number of *HSTW* states appear to allocate relatively fewer resources for vocational education, either because these states concentrate resources in area vocational centers that serve only a subset of the student population or because the state adjustment for vocational education is relatively smaller

than other states.⁴ In some cases, these resource distributions are recognized as being inadequate for the purpose. Studies performed by vocational administrators in Idaho, for example, indicate that the state cost reimbursement for vocational expenditures covers less than 52 percent of actual district expenditures. Relatively lower expenditures in Hawaii, Louisiana, West Virginia and Maryland likely reflect the smaller amount of state resources allocated for vocational purposes or the relatively low weight assigned to vocational students.

Table 4: State Classifications Based on Spending for Vocational Education

| (In alphabetical order) | | |
|--------------------------------|---------------------------------|----------------------------|
| <u>Greater Spending States</u> | <u>Moderate Spending States</u> | <u>Low Spending States</u> |
| Georgia | Alabama | Arkansas |
| Kansas | Delaware | Hawaii |
| Massachusetts | Florida | Idaho |
| Missouri | Indiana | Louisiana |
| North Carolina | Kentucky | Maryland |
| Ohio | Mississippi | New Jersey |
| Oklahoma | Pennsylvania | New York |
| Texas | Tennessee | South Carolina |
| | Virginia | West Virginia |

*No data on per FTE student expenditure were available for states indicated in bold. Classifications based on available data submitted by state administrators

Since relative per-FTE-student spending data are not available for all states, in part because not all states collect this type of information, care should be taken when reviewing state classifications. States missing data on relative student expenditures (outlined in bold in Table 4) were classified based on information available on the state approach for funding vocational education, the relative proportion of state resources allocated for vocational education, and conversations with state finance and vocational administrators. Consequently, while state classifications likely reflect relative spending levels, no attempt is made to rank state spending within spending classifications or to determine whether existing investments are adequate for their intended purpose.

⁴ It should be noted that since there are no data available on the relative expenditure per FTE student of students participating in area vocational schools, it might be that expenditures for vocational students within these area centers are actually quite high compared to students in comprehensive high schools. States were asked to provide these comparative data but, at the time of this writing, had not returned or were unable to calculate allocation estimates. As such, three states basing funding on foundation grants to comprehensive high schools — Arkansas, New Jersey, and New York — are grouped with low-spending states because it is assumed that the balance of students within the state do not benefit from state vocational allocations and because it is not clear that state foundation formulas are designed to take into account the higher costs associated with vocational education.

Benchmarks for Estimating State Spending

A review of national data indicates that nearly 80 percent of state expenditures for education can be traced to teacher salaries and benefits. Since most states use a uniform salary schedule to compensate teachers, vocational educators are generally no more expensive to employ than academic instructors. This suggests that the higher costs of offering vocational education are related to the manner in which instruction is offered. **Indeed, vocational class sizes are often smaller than academic classes due to the high cost of specialized instructional equipment and the potentially higher risk associated with equipment use.**

Based on data collected by the federal government as part of its Schools and Staffing Survey, the average class size of a full-time vocational teacher in 1993-94 was 21 students, compared with 25 students in academic classrooms. The implication is that districts must employ more full-time vocational instructors to generate a similar number of student contact hours, boosting the average cost of vocational education by approximately 19 percent over the cost of academic classes. Vocational class sizes are also affected by the level of skill specificity and type of instructional program, with highly advanced, capital-intensive programs, such as machine tools and welding, among the most expensive to provide. Accordingly, the cost for vocational instruction within a given state or school district within a state may depend on a variety of factors, including the number of students enrolled in vocational education courses, the number and type of introductory and advanced vocational courses offered, and the equipment used for instruction.

To gauge the adequacy of state funding for vocational education, state policymakers may wish to assess the extent to which their current funding formula compensates districts for the cost of staffing and equipping vocational programs. A simple rule of thumb is that additional state spending for vocational FTE students should at least equal the ratio of average class sizes for nonvocational versus vocational FTE students. Since average class size is directly related to the added expense of hiring vocational faculty, adjusting for this difference can account for roughly 80 percent of the added cost of providing vocational services. For example, if the average statewide class size ratio of nonvocational to vocational courses were 21:17 students, respectively, the state would need to establish funding levels that were at least 24 percent greater for vocational instruction to offset

staffing differentials.⁵ Whether this additional funding were allocated via a student weighting formula, cost reimbursement or instructional unit basis is irrelevant.

While the average cost of instructional equipment, materials and supplies is likely greater for vocational education, in most states these factors likely account for less than 20 percent of total state spending for vocational services. If, in the aggregate, these items cost 50 percent more than comparable academic inputs, they will add roughly 10 percent to unit costs. Unfortunately, the literature provides little guidance on the cost of equipping and supplying vocational programs, in part because few states collect data on district expenditures by program area. As such, states that specifically earmark funding for vocational equipment and supplies in addition to what is provided through the state formula are more likely to compensate for the added cost of providing instruction.

⁵ It should be noted that this approach does not take into account whether differences in average class sizes are appropriate. Capital-intensive programs and small or rural states may have difficulty enrolling a large number of students, driving down vocational class sizes. Thus, using this rule of thumb without taking into account whether smaller class sizes are reasonable could lead to inefficient outcomes. Rather than attempting to increase vocational class sizes or perpetuate existing class size differences, state may choose to seek more cost-efficient approaches to providing vocational education, for example by encouraging districts to collaborate in offering vocational programs or encouraging the provision of integrated academic and vocational coursework that is less capital-intensive.

Summary

Vocational education is generally recognized as being more expensive to provide than other forms of instruction. The added cost of providing vocational education can be attributed to the manner in which instruction is delivered: vocational class sizes are on average smaller than academic ones, meaning that districts must hire additional vocational instructors to generate the same number of student contact hours. Since roughly 80 percent of the cost of educating students can be traced to teacher salaries and benefits, class size differences likely account for much of the added cost of educating students. The cost of vocational equipment and supplies likely accounts for a substantial portion of the remaining variation.

States participating in the SREB–State Vocational Education Consortium use a number of different strategies for allocating state resources for vocational education. **While there is no one right approach for distributing funds, states that take into account factors that contribute to the higher cost of vocational education, and fund them accordingly, are more likely to provide sufficient resources to ensure local provision of quality programs.**

A review of state funding data indicates that *HSTW* states allocate varying amounts for vocational instruction; moreover, differences in how states classify their vocational allocations can complicate interstate comparisons. Perhaps the best measure of state investment is to compare relative state spending per FTE student in vocational education to that of students in nonvocational secondary programs. Of the 14 *HSTW* states for which data exist, spending differences between student groups equal or exceeds 20 percent in five states: Georgia, Kansas, Massachusetts, Ohio and Texas. Based on conversations with administrators from states unable to provide relative spending data, as well as a review of information on funding approaches and overall resource contributions, it appears that three additional states — Missouri, Oklahoma and North Carolina — allocate a relatively large amount of state revenues in support of vocational education. State legislators from *HSTW* states could benefit by reviewing state approaches and funding levels in these eight exemplary states.

To help gauge whether their state funding is sufficient to support vocational education, state policymakers may also wish to review their state funding formula to assess the extent to which districts are compensated for the added cost of staffing and equipping vocational programs. Given

the smaller class sizes that characterize vocational education, one simple approach is to assess whether supplemental state spending per FTE vocational student equals or exceeds the average class size ratio for nonvocational FTE versus vocational FTE students. Doing so could account for roughly 80 percent of the costs of providing instruction. Unfortunately, there is little data on the added cost of equipping and supplying vocational classrooms. State data indicate that states are allocating varying amounts for this purpose, with some earmarking no additional resources, while others allocate nearly 350 percent in additional funding.

While quantifying state allocations can provide useful information on relative state support for vocational education, basing funding decisions on allocation data alone can leave out a number of factors that affect vocational delivery. **Specifically, what constitutes an adequate program of vocational studies within a state and are existing allocations sufficient to meet these goals? If not, are deficiencies due to inadequate funding or the manner in which instruction is offered? Does the configuration of state vocational delivery systems support state attainment of its goals, or are there better strategies for organizing and providing vocational services?** Answering these questions will require that state legislatures, in cooperation with educators and industry representatives, undertake a systematic review of state policies governing vocational provision, in addition to the funding approaches and levels used to provide these services.

Table 1. Current Expenditure for Public K–12 Schools per Student in Fall Enrollment, by SREB Network States: 1999–2000

| State | Expenditure | National Rank |
|-----------------|-------------|---------------|
| United States | \$6,627 | — |
| New York* | 9,797 | 1 |
| New Jersey* | 9,775 | 3 |
| Massachusetts | 8,750 | 5 |
| West Virginia | 8,488 | 7 |
| Delaware* | 8,022 | 9 |
| Pennsylvania* | 7,243 | 15 |
| Maryland | 7,174 | 16 |
| Indiana* | 6,674 | 19 |
| Ohio | 6,479 | 21 |
| Kentucky | 6,425 | 22 |
| Kansas | 6,386 | 23 |
| Hawaii | 6,257 | 24 |
| Virginia | 6,149 | 26 |
| South Carolina | 6,113 | 29 |
| Texas | 6,092 | 30 |
| Georgia* | 5,953 | 34 |
| Florida | 5,872 | 35 |
| Missouri | 5,846 | 37 |
| North Carolina* | 5,724 | 38 |
| Louisiana | 5,701 | 39 |
| Oklahoma | 5,634 | 40 |
| Arkansas | 5,540 | 42 |
| Idaho | 5,411 | 43 |
| Tennessee | 5,387 | 44 |
| Alabama | 4,946 | 47 |
| Mississippi* | 4,605 | 48 |

* NEA estimate.

SOURCE: National Education Association, 2001.

Table 2. State Expenditures for Vocational Education: 2000-01

| State | State Allocation for Vocational Education | Expenditures for K-12 Education | Vocational Spending as a Percentage of K-12 Spending | Resource Distribution Strategy |
|------------------------|---|---------------------------------|--|--------------------------------|
| South Carolina | 162,091,982 | 2,488,041,922 | 6.5% | Weight |
| Texas | 631,314,055 | 10,767,749,379 | 5.9% | Weight |
| Delaware | 38,617,774 | 720,228,500 | 5.4% | Teacher Units |
| North Carolina | 291,469,538 | 5,544,847,985 | 5.3% | Student Units |
| Mississippi | 77,229,088 | 1,561,897,282 | 4.9% | Teacher Units |
| Florida ¹ | 404,545,957 | 8,803,428,356 | 4.6% | Weight |
| Ohio | 168,671,131 | 4,722,621,282 | 3.6% | Weight |
| Virginia | 138,168,469 | 3,945,928,985 | 3.5% | Teacher Units |
| Tennessee ² | 86,265,000 | 2,486,661,141 | 3.5% | Teacher Units |
| Louisiana | 82,165,110 | 2,396,153,559 | 3.4% | Weight |
| Georgia | 160,922,210 | 4,794,651,220 | 3.4% | Weight |
| Oklahoma | 50,770,039 | 1,728,878,659 | 2.9% | Teacher Unit/Quality Program |
| Massachusetts | 101,090,094 | 3,941,263,087 | 2.6% | Weight |
| Missouri | 55,187,028 | 2,463,741,696 | 2.2% | Teacher Units |
| Kentucky | 41,793,703 | 2,214,477,000 | 1.9% | Foundation |
| Indiana | 57,711,200 | 3,363,176,654 | 1.7% | Weight |
| New York | 190,414,170 | 15,500,000,000 | 1.2% | Foundation |
| Pennsylvania | 67,269,000 | 6,271,046,000 | 1.1% | Cost Reimbursement |
| Kansas | 25,421,336 | 2,566,898,998 | 1.0% | Weight |
| West Virginia | 10,153,751 | 1,294,433,082 | 0.8% | Student Units |
| Arkansas | 13,791,700 | 2,075,314,885 | 0.7% | Foundation |
| New Jersey | 41,082,222 | 6,752,919,000 | 0.6% | Foundation |
| Idaho | 6,490,578 | 1,175,825,472 | 0.6% | Cost Reimbursement |
| Hawaii ³ | 2,000,000 | 1,297,705,747 | 0.2% | Student Units |
| Maryland | 3,900,000 | 3,053,284,706 | 0.1% | Student Units |
| Alabama ² | Not Available | 2,896,410,958 | — | Teacher Units |

¹ Total state revenues based on FY00 data, state vocational on FY01 data

² Total state revenues based on FY00 data

³ Total state revenues based on FY02 data, state vocational on FY01 data

SOURCE: MPR State Survey.

Table 3. Base Per-Student State Expenditures for Vocational and Nonvocational Instruction: 2000–01

| State | Expenditures per FTE
Vocational Student/Teacher
Unit | Expenditures per FTE
Nonvocational
Student/Teacher Unit | Relative Expenditure |
|-----------------------|--|---|----------------------|
| Massachusetts | \$8,549 | \$5,449 | 1.57 |
| Ohio ¹ | 6,441 | 4,294 | 1.50 |
| Kansas | 5,730 | 3,820 | 1.50 |
| Texas | 3,901 | 2,847 | 1.37 |
| Georgia | 2,695 | 2,243 | 1.20 |
| Delaware | 62,998 | 55,288 | 1.14 |
| Indiana ² | 4,774 | 4,267 | 1.12 |
| Florida | 4,138 | 3,745 | 1.11 |
| Mississippi | 71,179 | 65,028 | 1.09 |
| Arkansas | 4,861 | 4,492 | 1.08 |
| Kentucky | 3,264 | 3,066 | 1.06 |
| Louisiana | 2,118 | 2,017 | 1.05 |
| South Carolina | 2,595 | 2,515 | 1.03 |
| Maryland ³ | 3,649 | 3,606 | 1.01 |

¹ Estimated spending per FTE based on state formula weight of 1.5 for students in technical education.

² Add-on weights range from 0.09 to 0.48; figure provided is average weight.

³ Estimates based on state allocation data.

Matrix 1: Foundation Grants

| State | State Funding
FY2001 | Financing Vocational Education |
|------------|-------------------------|---|
| Arkansas | \$13,791,700 | To support vocational education offered in comprehensive high schools, the state budgeted \$2,300,070 for program start-up and \$1,282,630 for equipment purchases. The state also provided \$10,282,630 for aid to area vocational centers. |
| Kentucky | \$41,793,703 | The state allocates money to support vocational programs offered in area vocational centers operated by school districts and in state-operated vocational centers. Resources are allocated based on weighted student FTE, with weights a function of program type. |
| New Jersey | \$41,082,222 | To support vocational education offered in comprehensive high schools, the state budgeted \$5,974,000 for salaries, wages, materials, supplies and other services. The state also provided \$35,108,222 for aid to County Vocational Programs. |
| New York | \$190,414,170 | State funding of \$98,120,649 is allocated to Board of Cooperative Educational Services (BOCES), which provides shared services to participating districts. BOCES receives state aid on behalf of its components for approved service costs, administrative expenditures, facility rental and construction costs. Special services aid of \$92,293,521 is provided to the five largest city school districts (i.e., New York City, Buffalo, Rochester, Yonkers and Syracuse) for use in supporting vocational services. |

Matrix 2: Funding by FTE Student Participation

| State | Total Funds Appropriated for Vocational Education
FY 2001 | Financing Vocational Education |
|----------------|---|--|
| Hawaii | \$20,000 per secondary school + \$2,000,000 allocated by FTE counts | Each secondary school receives a base amount of \$20,000 regardless of enrollment. The remaining \$2,000,000 is allocated based on grades 9-12 FTE vocational student enrollment. |
| Maryland | \$3,900,000 | Allocated based on FTE vocational enrollment at district level, and spending is locally controlled. |
| North Carolina | 291,469,538 | Each district is funded at a base of 50 months of employment, with the remaining funding allocated based on vocational ADM in grades 7-12. In FY 2001, this sum amounted to \$275,854,605 (constituting roughly 95 percent of total state funding for vocational education). An additional \$15,614,933 was also allocated, with each LEA receiving a base amount of \$10,000 with the remainder distributed based on district ADM. This amounted to \$25.97 per ADM in grades 7-12. |
| West Virginia | \$10,153,751 | Funding is allocated to LEAs based on a FTE membership calculation. This is added onto the general \$6,806.27 state appropriation per student. |

Matrix 3: Funding by Instructional Unit

| State | Teacher: Student Ratio for Vocational ADM Counts | Financing Vocational Education |
|-------------|---|--|
| Alabama | 1:18 | Foundation program units are based on teacher units, with one instructor unit funded per 18 pupils in grades 9–12. Grade divisors for vocational students include an adjustment to reflect increased programmatic costs. The adjustment for vocational education reflects an added 16.5 percent to the overall ADM, and then vocational pupils ADM is weighted 2.0 in grades 9–12. This means that vocational enrollments are inflated (voc ADM x 1.165 x 2.0) prior to dividing by the foundation instructional unit (18). Principals in Area Vocational Centers shall be funded at an additional .33 weight for high schools and Area Vocational Schools alike. Units are then converted to dollar amounts using a state salary matrix. |
| Delaware | 1:20 plus (27,000 pupil minutes/week x 0.5) | Vocational education is funded in three ways. The average salary of a secondary regular teacher is funded at \$42,233 per unit, based on 1 unit for every 20 FTE students. One instructional unit is generated for each 20 FTE vocational students, and an additional 0.5 unit is added for each 27,000 vocational pupil minutes per week, after the first full unit. However, 0.5 of vocational education units are subtracted from the regular units. For example, for 100 vocational students a base of 5 instructional units and 2 vocational units would be generated. Then, the two vocational units would be multiplied by 0.5 and subtracted from the original 5 units, leaving a total of 4 instructional units. The 2 vocational units would then be added to the original 4 units to generate 6 vocational instructional units. Resources for materials, supplies, and energy costs are also allocated at a rate of 2.6 times that for regular education. Additional funding is also provided to equalize funding across districts. As of FY 2000, districts must spend 90 percent of the funding generated by vocational education on vocational programs. |
| Mississippi | 1.5:27 | A teacher unit is equal to 1 teacher per 27 students ADA. An additional 0.5 teacher unit is added for each approved vocational program. As part of the basic funding program, districts are allotted \$15,000 plus \$50 for each teacher unit in excess of 50 units with a cap of \$25,000, and \$75 per year for each teacher unit. Teacher salaries and fringe benefits are funded through a combination of the state's minimum program formula and resources allocated through the state office of vocational education. Funding for equipment and administrative costs is also provided. |
| Missouri | Actual Teacher Count
Effectiveness Index
Incentive Funding
Enhancement Grant
Annual Funding | Funding is provided to area vocational schools based on teacher salaries; comprehensive high schools are awarded \$300/contract month for each full-time vocational teacher or \$35 per class period for non-full-time instructors. Additional funding is awarded based on a state effectiveness index (EI) that scores the relative success of a program in placing students in jobs as well as the responsiveness of a program to labor supply and demand factors. Based on funds available, the state calculates a maximum allotment per contact hour (or hour of class time) per program. Then, to calculate the actual allocation per program, the program's EI score is essentially multiplied by the amount per contact hour allotted to equal an incentive grant. The incentive formula allows for an additional 10 percent incentive to schools enrolling students in target groups (disadvantaged, disabled, and nontraditional students). State funding is also available for equipment reimbursement at 75 percent for enhancement grants and 50 percent for annual costs, with both levels of funding contingent on the amount of state-appropriated funds for each category. |
| Oklahoma | Actual Teacher Count
Quality Foundation
Program | In comprehensive high schools, vocational teachers are funded at \$200 per contract month to pay for professional development, reporting and student organizations. In addition, program assistance grants ranging from \$5,060 to \$8,280 per teacher are distributed, depending upon the program. The state also provides a \$2.5 million grant for program development every year for which districts may apply, and the state also provides supplements for agricultural teachers on 12-month contracts. Technology centers are funded under the Quality Foundation Program at \$118,359 per FTE program. |
| Tennessee | 1:20 | Using average daily attendance Tennessee funds salaries for one nonvocational teacher per 26 nonvocational, and one vocational teacher per 20 vocational students. Also, student supplies and equipment are funded differently. Supplies and equipment are funded at \$27 and \$20 per nonvocational student, and \$101 and \$62 per vocational student, respectively. School districts have local control over how the funds are spent and can spend more or less than the amount generated by those components labeled vocational. |
| Virginia | 1:15 to 1:21 | Funding teacher units: each program has to establish teacher/student ratios ranging from 1:15 to 1:21. Teacher salaries are funded depending on ADM, and adjustments are made for cost of living and benefits (FY 2002 base \$37,362/yr + 15 percent benefits + 10 percent added cost of living). Virginia also provides categorical funding of \$9,572,019 for cost reimbursement of equipment, regional program staffing and other indirect costs. |

Matrix 4: Cost Reimbursement

| State | Total Funds Appropriated for Vocational Education FY 2001 | Eligible Costs | Financing Vocational Education |
|--------------|--|--|---|
| Idaho | \$6,490,578 | Equipment, Materials and Supplies, Extended Contracts, Professional Development, Instructor Reimbursement, Misc Contractual Costs. | Funding is allocated based on an added cost formula, but each program area has a funding cap. For example, machining technologist programs are capped at \$15,390 per unit and marketing education is capped at \$5,130 per unit. Professional technical schools are eligible for both the program funds, and additional aid calculated at an added 0.30 ADA. |
| Pennsylvania | Vocational Education
\$53,069,000

Vocational Equipment
\$10,000,000

Other
\$4,200,000 | Comprehensive High Schools and Area Voc. Tech Centers | A vocational average daily membership (VADM) is calculated by multiplying the ADM for school district-operated vocational education programs by 0.17 and by multiplying the ADM for AVTS-operated vocational education programs by 0.21. The subsidy is calculated by multiplying the VADM by the product of the lesser of the school district's actual instruction expense or its base earned for reimbursement multiplied by the greater of the school district's MV/PI aid ratio or 0.3750. Other costs include \$3.7 million for New Choices New Options and \$500,000 for registered apprenticeship. |

Matrix 5: Weighted Funding

| State | Base Per 1.0 Weight Allocation
FY 2001 | Weight or Added Weight Factor per Vocational FTE
& Unadjusted \$/FTE | Formula Allocations for Vocational Students |
|----------------|---|---|---|
| Florida | \$3,745 | Weight = 1.211 voc. vs 1.096 for 9-12 basic
Unadjusted = \$4,138 | Formula: FTE x adjustment factor x 1.211 x \$3,745
Adjustment: FTE is adjusted for District Cost Differentials, sparsity indices, hold harmless and a number of other factors. |
| Georgia | \$2,243 | Weight = 1.2018
Unadjusted = \$2,695 | Formula: vocational FTE x 1.2018 x \$2,243
Adjustment: teacher experience and training.
Funding is intended to pay at least the beginning salaries of all teachers needed to provide essential classroom instruction. |
| Indiana | \$4,267 | Add-on=
0.38 Agriculture (1/2 day)
0.33 Distributive Ed
0.14 Consumer Homemaking
0.33 Occupational Home Ec.
0.33 Business Ed
0.48 Trade and Industry 1/2 day
0.33 Trade/Industry (2 periods)
0.28 Cooperative Education | Formula: (FTE vocational + (FTE vocational x add-on weights)) x \$1,680
Adjustments: At-risk index; state monetary adjustment based on intermediate step funding level. |
| Kansas | \$3,820 | Add-on = 0.50
Unadjusted = \$5,730 | Formula: (adjusted district enrollment weight + (vocational FTE x 0.50)) x \$3,820
Adjustments: low enrollment weight, transportation weight, at-risk pupils weight, school facilities weight, ancillary school facilities weight. |
| Louisiana | \$2,017 | Add-on = 0.05
Unadjusted = \$2,118 | Formula: (1.0 + (.05 x vocational units)) x local equalization factor x \$2,017
Adjustments: State pays 65 percent of local eligibility |
| Massachusetts | \$5,449 | State pays \$8,549 per vocational student versus \$5,449 per high school student meaning the effective weight is 1.56. | Complex state formula considering at least 19 factors (salaries, benefits, professional development, equipment, supplies, etc.) are calculated for 12 different student categories, of which vocational education is one. Funding amounts are multiplied by a wage adjustment factor calculated for each district. Additional resources are also allocated for work-based learning program. |
| Ohio | \$4,294 | Add-on = 0.50 for regular programs 0.20 for workforce development
Unadjusted = \$6,441 | Formula: Cost of Doing Business Factor (CODBF) x ADM x state percent share X 0.5 x \$4,294
Adjustments: local effort; CODBF |
| South Carolina | \$2,515 | Weight = 1.29 voc. vs. 1.25 high school
Unadjusted = \$2,595 | Formula: (FTE vocational x 1.29 x \$2,515)*.7
Adjustment: Index of tax-paying ability to determine local share. State pays 70 percent of foundation program. Academic courses weighted 1.25. |
| Texas | \$2,847 | Weight = 1.37
Unadjusted = \$3,901 | Formula: FTE vocational x 1.37 x \$2,847 adjusted for local characteristics
Adjustments: Cost of education; small and mid-sized districts; sparsity; adjusted property value for districts not offering all grade levels. |

Considerations for Planning a State Career and Technical Virtual High School

Providing Web-based courses for career and technical students

Is it possible today for a state to create a Career and Technical Virtual High School?
Yes. Over the past five or more years, a number of states have created virtual high schools. Many students across the country are presently taking high-quality academic Web-based courses. There is no reason that courses focusing on career and technical education cannot be included in these offerings.

Students at many schools in *HSTW* states do not have access to a broad range of career and technical courses. This problem is getting worse as teacher shortages increase. Web-based courses offered by trained, highly qualified teachers have the potential of successfully meeting this need.

To develop this potential, a state can provide leadership to establish a vision, assess needs and set priorities. The state can remove policy and regulatory barriers, provide incentives to encourage use, coordinate efforts across the state and gather and share information with schools and school districts.

Existing virtual high schools vary widely in their goals, staffing, areas of activity and funding. The Florida Virtual School, the largest in the country, offers 62 high school academic courses and anticipates serving more than 8,000 students this year. The Kentucky Virtual High School provides leadership to schools to coordinate services and offer courses to Kentucky students. Other state departments of education, including Maryland and West Virginia, have hired a person to provide leadership and work closely with schools and school districts to identify needs, evaluate courses and coordinate student access.

The need for Web-based courses to provide hands-on experiences for students is of special concern. As technology evolves and we learn more about how to deliver courses effectively via the Web, hands-on experiences will become a natural part of virtual learning. **Many Web-based courses already require hands-on experience.** In the Florida Virtual School, for example, teachers develop science experiments that use materials easily found in a student's kitchen. The school also sends lab equipment (books, CDs,

video- tapes, test tubes, rulers, thermometers, etc.) to students who take chemistry, physics, AP biology, earth space science and marine science. Students must return the materials at the end of the course, but no lab fees are assessed.

Another key issue is whether the virtual school will develop its own courses or lease or purchase courses. Leasing or purchasing courses should be considered whenever possible; because technology changes so rapidly, the cost of development and maintenance can be high. Other issues exist as well, such as funding, teacher certification and alignment of course content with state academic standards and equity of access regardless of where a student resides.

A state may want to create a career and technical state virtual school or add to existing state virtual school efforts. In either case, states will need to consider the following topics as they move toward using the Web to meet student career and technical course needs.

1. Vision

a) Articulate your Vision

- Why do you need to offer a Career and Technical Virtual High School?
- What are the specific and broad goals for virtual courses?
- To whom will you need to communicate these goals and vision?
- How will this be communicated and over what period of time?
- Is a process in place to review and update goals and vision on a regular basis?

b) Perform a Student Needs Analysis

- What do you need to know about expanding other high school career and technical courses and in what field?
- How will this data be gathered?
- Who will gather and analyze the data?
- What additional information is needed to determine the number of students who would participate in online courses if they were available?

c) Establish Priorities

- Who will determine what courses will be offered?

- What criteria will be used to determine need?

d) **Organizational Issues**

- To whom will the online school be accountable?
- What administrative structure will be required to fulfill the management, instruction, development and assessment functions?
- What kind of physical facility will be needed? Where will it be located?
- What state or district policy changes will be needed to facilitate development of the Career and Technical Virtual High School?

2. **Management**

a) **Administration and Staffing of a Full-Service High School**

- How many persons will you need to administer and support the initiative?
- Who will handle student registration and other student-related services and needs?
- Who will staff a help desk that will be required to meet the student learning and technical needs?
- Who will train and support the school-based staff who will be in direct contact with students?
- Who will mentor students taking courses?
- Who and what positions will be required?
- How will administrative and technical staff and teachers be recruited and employed?
- How will you manage a staff you do not see face to face?
- Will online teachers need to be certified to teach in the state where the student is taking the course?
- How will virtual staff be evaluated?

b) **Determine Technical Infrastructure and Needs**

- What level of technology do receiving students currently have, and will it be compatible with available online courses?
- Do students have Internet access when and where they need it?
- Will labs need to be created in support of certain courses? Will these be located in existing or new facilities?
- What will the course development and delivery platform be?

c) **Marketing**

- How will you disseminate information about the courses?
- How will you "sell" the value of online courses?
- Is a network of "critical friends" in place to support the work of the school?

3. **Cost and Funding**

- Who will serve as fiscal agent?
- What is a reliable and substantial revenue source for the virtual school?
- What will the cost be to develop and offer a course?
- Will you develop, lease, or purchase courses?
- Will you host the course(s) or contract hosting to another agency or private company?
- Who will pay tuition and fees for students taking the courses?
- Who will collect tuition and fees?
- Will cost be a determining factor in offering courses?

4. **Instruction**

- Will course content be aligned with the states' student academic standards?
- Who will evaluate courses to ensure high quality?
- Will the school be accredited?
- Will courses be accepted for student credit by receiving schools?
- Will a formal agreement be needed for each school whose students are participating in courses?

5. **Evaluation**

- Is there a plan to obtain data frequently (every 3 months) about the status of courses?
- Is there a plan to contract with an outside evaluator for the virtual school?
- Who will be responsible for analyzing evaluative feedback to improve courses and programs?
- Are there plans to ensure customer (students, parents, schools) satisfaction?
- Is there a plan to regularly gather and analyze student course completion and achievement data?
- How and who will assess online teacher effectiveness?

Linda Pittenger, Director, Kentucky Virtual High School; and Julie Young, Executive Director, Florida Virtual School provided valuable information used in this paper.



SREB

Facts About High School Career/Technical Studies

This fact sheet contains the major benefits, challenges and opportunities that exist as states, districts and schools strive to raise the achieve-

ment of career/technical students in preparation for careers and further education.

What Are the Benefits of High School Career/Technical Studies?

■ Academic Benefits

Career/technical teachers who often require students to use academic knowledge and skills in completing assignments increase students' chances of meeting the *High Schools That Work* reading, mathematics and science performance goals by seven to 10 percent (2000 *High Schools That Work* Assessment).¹

- Students who complete the *HSTW*-recommended academic core and a career concentration:
 - ◆ have average reading, mathematics and science scores that equal or exceed those of college-preparatory students on the *HSTW* Assessment;
 - ◆ continue their studies after high school at a higher rate than students who do not complete an upgraded academic core and a concentration; and
 - ◆ have a higher grade point average in college and are more likely than other high school graduates to remain in college throughout the first year.

■ Employment and Earnings Benefits (Boesel, Hudson, Deich and Masten, 1994)

- High school students who complete a concentration of three or four credits in a career/technical field of study have better employment and earnings out-

comes than students who complete fewer than two credits in a single career/technical field.

- Career/technical graduates who obtain jobs in their fields of study outperform their peers who are employed in areas unrelated to their areas of study.
- Female high school graduates who complete concentrations in business or health have better employment outcomes than females who complete studies in other fields.
- Students who graduate with a career/technical concentration and pursue further education are 2.5 times more likely than college-preparatory students to be employed while pursuing further study.

■ Benefits to the School and the Community

One high school dropout represents thousands of dollars in tax revenue that is lost to the nation over a person's lifetime. Multiplied by the number of dropouts between the ages of 16 and 24, the problem can amount to billions of dollars in lost tax revenue.

- Dropout/truancy benefits (Kulik, 1998)
 - ◆ High-risk students are eight to 10 times less likely to drop out in the 11th and 12th grades if they enroll in a career/technical program rather than a general program.

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¹ The *High Schools That Work* Assessment is based on the National Assessment of Educational Progress (NAEP).

- ◆ A quality career/technical program can reduce a school's dropout rate by as much as six percent.

- ◆ Career/technical students are less likely than general-track students to fail a course or to be absent.

What Conditions Are Necessary to Provide Quality Career/Technical Studies?

■ Effective Guidance and Advisement

The 2000 *High Schools That Work* Assessment showed that career/technical students who receive effective guidance and advisement services are much more likely to complete the *HSTW*-recommended English, mathematics and science curriculum and to meet the *HSTW* performance goals in reading, mathematics and science than students who fail to receive such services. (See Figures 1 and 2.) Effective guidance and advisement services include:

- encouraging students to take more challenging mathematics and science courses;
- assisting students in planning a high school program of study by the end of grade nine;
- involving parents with their children in planning a high school program of study; and
- providing information and guidance about post-high school studies.

■ Integrated Academic and Career/Technical Content (*HSTW* data)

Students who study rigorous integrated academic and career/technical content in their career/technical classes achieve at a higher level than students who fail to have such experiences. The higher-achieving students have career/technical teachers who:

- place a great deal of importance on assignments that require students to read, write and use mathematics; and
- require students to use mathematics, read technical manuals and books, and use computers daily or weekly in completing career/technical assignments. (See Figure 3.)

Figure 1
Percentages of Students Completing the *HSTW*-Recommended Curriculum in 2000

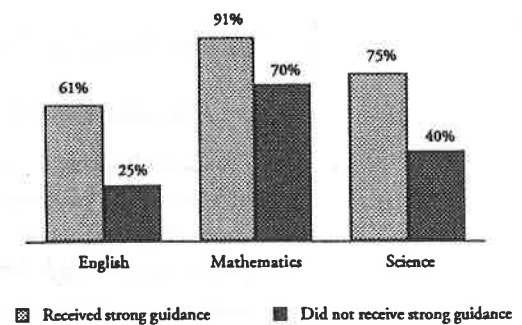


Figure 2
Percentages of Students Meeting the *HSTW* Performance Goals in 2000

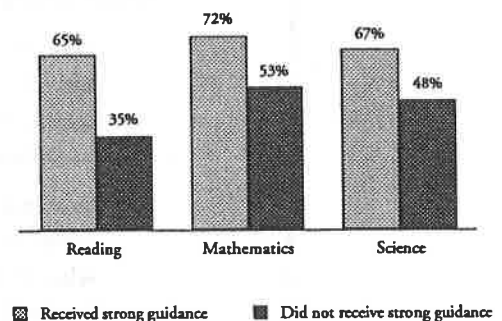
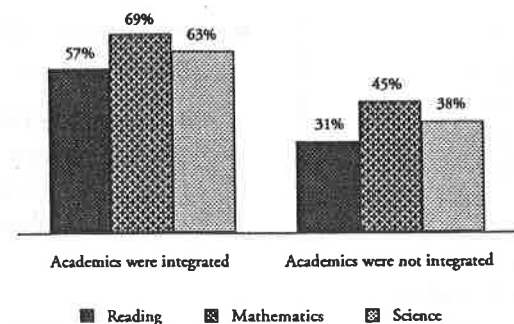


Figure 3
Percentages of Students Who Met the *HSTW* Performance Goals in 2000 by Whether or Not Their Career/Technical Courses Integrated Academic Skills

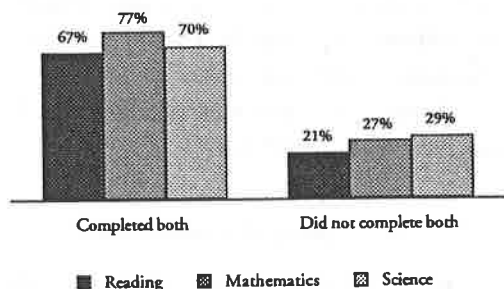


■ A Solid Academic Core and In-depth Career/Technical Studies

Career/technical students learn the most when they combine strong academic content with studies in a career/technical field (*HSTW* Assessment). The *HSTW*-recommended curriculum enables more students to meet the *HSTW* performance goals in reading, mathematics and science. The curriculum consists of:

- four credits in college-preparatory-level English;
- three mathematics credits, including two credits in Algebra I, geometry or Algebra II;
- three science credits, including two credits in lab-based courses such as biology, physical science, chemistry, physics and applied physics. (See Figure 4.)

Figure 4
Percentages of Students Who Met the *HSTW* Performance Goals in 2000 by Whether or Not They Completed a Challenging Academic Core and a Career Concentration

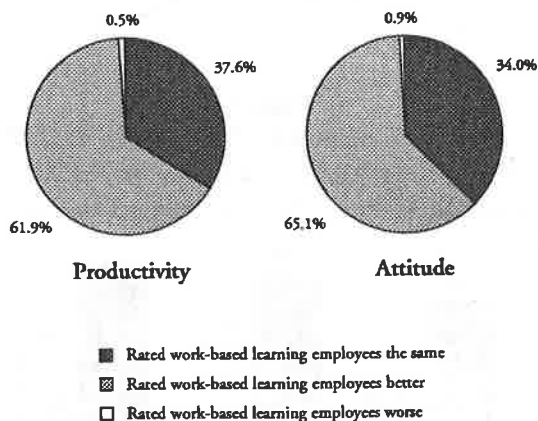


■ Quality Work-site Learning

The vast majority of employers said front-line workers who had participated in school-sponsored work-based learning in high school had better attitudes and productivity than employees who missed those experiences. (See Figure 5.) The U.S. Department of Education reported in 1992 that:

- 71 percent of all high school students work during their senior year; and
- 25 percent of career-oriented students participate in school-sponsored work-

Figure 5
How Employers Rated Employees Who Had Work-based Learning



based learning, compared with three percent of college-preparatory students and six percent of general-track students.

The 2000 *High Schools That Work Assessment* showed that quality work-based learning experiences contribute to student achievement.

The conditions that contribute to strong work-based learning include:

- observing veteran workers in certain jobs;
- learning how to do a job from a workplace mentor;
- being evaluated according to clear standards;
- receiving encouragement from a work-site mentor at least monthly to develop strong work habits and good customer relations skills;
- being shown daily or weekly how to use communication skills at the work site. (See Figure 6.)

■ Strong School Leadership

Effective school leaders work with the entire faculty to create a climate of high expectations for student achievement. (See Figure 7.)

- Career-oriented students achieve at a higher level in school when:

- ◆ their teachers indicate the amount and quality of work it takes to earn an A or a B;
- ◆ they receive extra help; and

- ◆ they spend one or more hours daily on homework (2000 *HSTW* Assessment).

Figure 6
Percentages of Students Meeting the *HSTW* Performance Goals by Whether or Not They Had Quality Work-based Learning Experiences

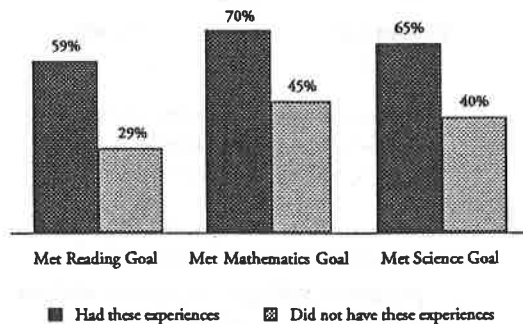
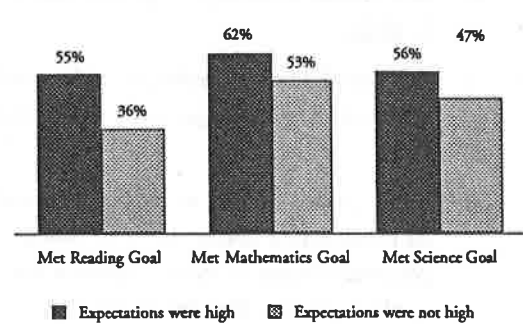


Figure 7
Percentages of Students Meeting the *HSTW* Performance Goals by Whether or Not They Experienced a Climate of High Expectations



How Do High School Career/Technical Studies Need to Change?

■ REFOCUS THE PURPOSE OF CAREER/TECHNICAL STUDIES

The bottom two-thirds of the nation's labor force must learn much better skills to prevent their wages from falling (Lester Thurow, 2000). An increasing proportion of the workforce must be able to create, analyze and transform information and interact electronically with others (Alan Greenspan, speaking at the U.S. Department of Labor's 21st Century Workforce Summit in June 2001). Current practices will yield workers who struggle to get by in dead-end, high-turnover, low-wage jobs. The modern economy — with its dynamics, innovation and speed — requires workers who have academic knowledge and skills as well as strong career/technical knowledge and skills. Today's students need to prepare for further study as well as a career.

- More than 50 percent of the nation's high school career/technical graduates pursue further study.
- More than 60 percent of career/technical graduates at *HSTW* sites pursue further study.

As workplace requirements continue to rise, students must be able to build on what they have learned. They also must learn to use computers and software to prepare for a workplace where electronic communication has become a "permanent fixture." Students must be technically literate. They must be able to:

- read, understand and communicate in the language of a career field;
- use mathematics reasoning and understanding to solve problems found in a career field;
- understand underlying technical concepts, principles and procedures in a career field; and
- use basic technology to complete projects in a broad career field.

Too few 17-year-olds have the reading and mathematics skills needed in the workplace (The Education Trust, Inc.).

- Only about half of 17-year-old white students and fewer than one-fifth of 17-year-old African-American students can read and understand complicated information.

Table 1
Percentages of public high school students
receiving credits in career/technical studies

| | 1982 | 1990 | 1994 |
|---|------|------|------|
| Received at least three credits in a career/
technical concentration | 34% | 28% | 25% |
| Received four or more credits in a career/
technical concentration | 13% | 8% | 7% |

Sources: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study, and the 1990 and 1994 National Assessment of Educational Progress (NAEP) High School Transcript Studies

■ **INCREASE OPPORTUNITIES FOR STUDENTS TO ENROLL IN QUALITY CAREER/TECHNICAL COURSES**

The percentages of high school students who received credits in career/technical education declined nationwide between 1982 and 1994. (See Table 1.)

Students graduating from rural public high schools in 1982, 1990 and 1994 completed more vocational courses than students graduating from urban or suburban schools. The amount of career/technical credits and the amount of specific occupational coursework completed by students graduating from urban and suburban schools decreased between 1982 and 1994. The decline was steeper for urban graduates than for suburban ones. The amount for students graduat-

ing from rural schools did not decline significantly. (See Table 2.)

As opportunities for career/technical studies wane, we see declines in the percentages of students earning regular high school diplomas and increases in the percentages of students earning General Educational Development (GED) diplomas. (See Figure 8.)

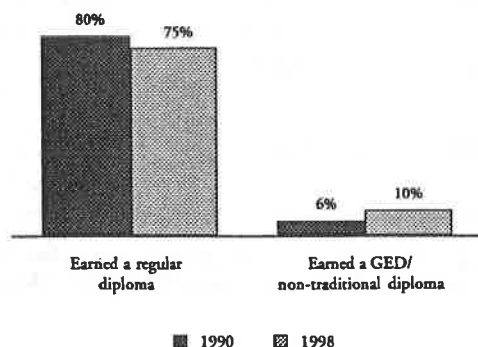
- Even though quality career/technical programs benefit students, schools and communities, such programs are unavailable to students in many areas.
- ◆ Seventy-one percent of the nation's high schools enroll fewer than 1,000 students. Small schools are less likely to offer quality career/technical studies.

Table 2
Average number of Carnegie units received by public high school students in
career/technical and labor market-specific studies by type of school

| School Setting | Total Career/technical Credits | | | Labor Market-specific Credits | | |
|----------------|--------------------------------|------|------|-------------------------------|------|------|
| | 1982 | 1990 | 1994 | 1982 | 1990 | 1994 |
| Rural | 5.2 | 4.7 | 4.7 | 3.3 | 3.2 | 3.3 |
| Urban | 4.3 | 3.7 | 3.3 | 2.8 | 2.5 | 2.4 |
| Suburban | 4.5 | 4.0 | 3.5 | 2.9 | 2.7 | 2.5 |

Sources: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Sophomore Cohort 1982 High School Transcript Study, and the 1990 and 1994 National Assessment of Educational Progress (NAEP) High School Transcript Studies

Figure 8
Percentages of Students Earning Regular High School Diplomas v. GED or Other Non-traditional Diplomas in 1990 and 1998



- ◆ Students in many rural schools attend area career/technical centers, but transportation often is a problem and few opportunities are available to integrate academic and career/technical studies.
- ◆ A few states, such as Delaware, Massachusetts and New Jersey, allow students to “choose” career/technical high schools that provide rigorous academic and career/technical content.
- ◆ Students in a few communities enroll in career/technical “centers

of excellence” located at other high schools or at community or technical colleges. These schools are aligned to labor market demands and usually have up-to-date equipment, but they are too few to constitute an organized effort.

- Not every high school career/technical program is a high-quality program. It is important for states to determine:
 - ◆ what constitutes a high-quality career/technical program;
 - ◆ how many high-quality programs exist in the state; and
 - ◆ how students’ opportunities to choose such programs vary among schools and school districts.
- States can focus on the following questions in evaluating high school career/technical programs:
 - ◆ Do the programs lead to good employment opportunities?
 - ◆ Do the programs provide a range of options for continued learning?
 - ◆ How many broad career fields of study should be available to students? (See Table 3.)

Table 3
U.S. Department of Education, Office of Vocational and Adult Education
Career Clusters for Career/Technical Studies

| | |
|---|--|
| Agriculture and Natural Resources | Health Science |
| Architecture and Construction | Hospitality and Tourism |
| Arts, Audio/Video Technology and Communications | Human Services |
| Business and Administration | Law and Public Safety |
| Education and Training | Manufacturing |
| Finance | Retail/Wholesale Sales and Service |
| Government and Public Administration | Scientific Research and Engineering |
| | Transportation, Distribution and Logistics |

What Can States Do to Improve the Quality of Career/Technical Studies?

States can establish policies and incentives to encourage school districts and high schools to work with each other, with postsecondary technical and community colleges, with area vocational centers and with employers to develop career/technical programs of excellence that will attract a broad range of students. Here are eight suggestions for doing so:

Suggestion 1: Establish career academies in high schools. These small "learning communities" consist of:

- teams of teachers who work with groups of students for two to three years;
- students who complete a college-preparatory-level curriculum focusing on a broad career theme; and
- employers and postsecondary education representatives who can help develop the program.

Suggestion 2: Implement a dual-enrollment system for high school students that will provide:

- opportunities to study quality career/technical courses at postsecondary schools; and
- college credit at state and community colleges when students meet certain academic and course standards.

Suggestion 3: Establish career/technical programs for high school students on the campus of a postsecondary institution. The postsecondary facilities are:

- often located close to where students attend school; and
- have state-of-the-art labs that high school students can use during the daytime when the labs often are not utilized fully.

Suggestion 4: Create technical high schools of choice. Such schools:

- combine rigorous academic studies with quality career/technical content;
- develop relationships with local employers who feel "ownership" of the school; and
- benefit urban and other high-population areas.

Suggestion 5: Modernize offerings at area vocational centers that represent "model" examples of academic and vocational integration.

Suggestion 6: Offer distance learning. Make Web-based courses at community colleges available to high school students. The Florida Virtual High School (www.flvs.net) is a good example.

Suggestion 7: Provide work-based learning. Such a program should:

- rotate students through several jobs to show all aspects of the company;
- involve an agreement of expectations and responsibilities of students, work-site mentors, employers, teachers and school work-based learning coordinators; and
- have the support of local business and industry.

Suggestion 8: Reinforce the high school senior year (The National Commission on the High School Senior Year). Motivate seniors by allowing them to:

- take college career/technical courses at a community or technical college; and
- enroll in a structured internship or apprenticeship program.

■ REDESIGN WHAT CAREER/TECHNICAL TEACHERS TEACH

There is a weak transfer of academic knowledge to career/technical tasks in many career/technical programs. While states and schools have raised the quality of academic content, many of them have failed to develop standards for career/technical courses that integrate academic and industry standards. Seventy-nine percent of high schools that offer career/technical education have adopted standards for these programs, but 54 percent of these schools reported only a minor level of industry input (Phelps, Parsad and Farris, 2001).

- Career/technical education programs need to develop standards that integrate academic and industry standards to remain relevant.
- Teachers must raise students' expectations. All career/technical students should be expected to take an algebra

course with equations; take a lab-based science course; read and understand literature; and use reading, writing and mathematics in career/technical studies.

- It is more difficult for states to develop career/technical standards than to develop academic standards.
 - ◆ Career/technical education is more diverse than academic education.
 - ◆ Aligning business/industry standards and academic standards is a daunting task.
 - ◆ Academic and career/technical educators and employers must work together to develop integrated career and technical standards.
- Standards are only the beginning. Other steps include:
 - ◆ developing course syllabi;
 - ◆ providing improved curriculum materials;
 - ◆ developing a way to audit career/technical programs; and
 - ◆ helping career/technical teachers upgrade their academic skills and develop their repertoires of instructional methods for integrating academic and technical studies.

■ RE-THINK WHAT CAREER/TECHNICAL TEACHERS NEED TO KNOW AND BE ABLE TO DO

Career/technical teachers often differ from other faculty. They are more likely to be older males with less formal education (2000 *HSTW* Teacher Survey). Fifty-two percent of career/technical teachers are at least age 46, compared with 46 percent of the academic faculty. Almost 50 percent are male, compared with 33 percent for other faculty members. One in six has less than a bachelor's degree, compared with less than one percent of other teachers.

Teacher effectiveness is the number-one factor in raising student achievement. Teacher training and professional development can give teachers what they need to be successful. Three charac-

teristics of effectiveness (Darling-Hammonds, 1999) are:

Subject matter knowledge — Career/technical teachers must have both academic and occupation-specific knowledge, and they must know how to use this knowledge to develop curriculum goals. Unfortunately, some teachers are weak in one or both areas of knowledge. Career/technical teachers who participated in the 2000 *HSTW* Teacher Survey reported that:

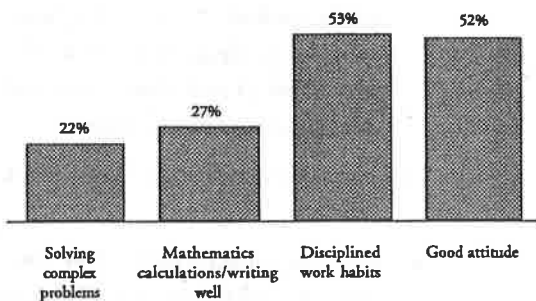
- ◆ 35 percent needed staff development to learn mathematical concepts underlying their teaching fields;
- ◆ 43 percent needed staff development to learn how to apply scientific methods of inquiry to problems in their teaching fields;
- ◆ 40 percent needed staff development to learn how to integrate reading, writing and communication skills into their classes; and
- ◆ 43 percent needed staff development to align their course standards to state academic and vocational skills standards.

Neither teacher education nor business/industry experiences alone give teachers the know-how to integrate academic and technical content. Furthermore, teachers are not getting the help they need. Career/technical teachers who participated in the 2000 *HSTW* Teacher Survey revealed that:

- ◆ 70 percent received no staff development in getting career-oriented students to master complex content in algebra, geometry and statistics;
- ◆ 64 percent received no staff development in teaching science in an applied or occupational context; and
- ◆ 88 percent received less than 20 hours of staff development in integrating reading, writing and communication skills into curriculum and instruction.

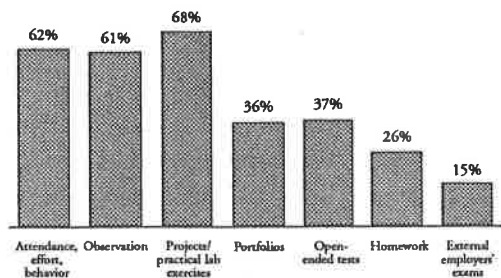
Knowledge of teaching and learning — New teachers who come directly from industry may not know how to tailor instruction to students' needs. While these newcomers may be good at grading students on "soft" skills — such as work habits — they may not know how to assess students' learning of "hard" skills — such as rigorous academic and technical content. (See Figure 9.)

Figure 9
What Do Teachers Grade Most?



Ability to use a wide range of teaching strategies adapted to students' needs — Career/technical teachers tend to use assessment methods that measure students' specific career skills rather than their skills in using communication, mathematics and science to solve problems in a career field. (See Figure 10.)

Figure 10
How Teachers Assess Students



What Are the Sources of Career/Technical Teachers and What Are the Trends?

During the past 15 years, universities have diminished their capacity to prepare career/technical teachers.

- In 1991, only about 100 U.S. colleges and universities offered four or more career/technical teacher-education programs on a single campus (Lynch, 1996).
- At least 30 technology-based teacher-education programs closed down at colleges and universities between 1979 and 1988.

Teachers who enter the education field from business and industry have extensive work experience but no pedagogical training. More states should focus on providing ongoing, high-quality, streamlined preparation for these teachers.

What Can States Do to Find More Career/Technical Teachers?

- Support innovative approaches in retaining career/technical teachers and alternative teacher certification in recruiting degreed persons as career/technical teachers.
- Require professional development to help teachers redesign curriculum, instruction and assessment based on rigorous academic and career/technical standards.
- Provide incentives for teachers who receive certification from The National Board for Professional Teaching Standards.
- Develop a framework of instructional practices to integrate academic and career/technical studies and advance students' academic and technical achievement.

■ INCREASE ACCOUNTABILITY FOR STUDENT LEARNING

Accountability for high school career/technical studies garners less attention and fewer resources than accountability for academic studies.

- Only seven percent of public high schools with career/technical programs prepare students for state or industry exams (Phelps, Parsad and Farris, 2001).

- ◆ Pennsylvania, New Jersey and some isolated school districts use tests from the National Occupational Competency Testing Institute (NOCTI).
- ◆ Arkansas, Kentucky, North Carolina, Ohio, Oklahoma and West Virginia use state-generated exams.

In some instances, exams are not available and the results do not count for either the student or the school. This means that the results seldom are used to improve what and how students are taught.

- While useful for improvement, many exams are low-budget, and their reliability, validity and technical quality may be questionable.
- Rigorous, well-designed, end-of-program exams offer a number of advantages. These exams:
 - ◆ give guidance to what students need to learn and what teachers can do to improve instruction;
 - ◆ provide incentives for students to work hard;
 - ◆ limit the potential for higher content standards and instructional levels;
 - ◆ focus the attention of state and local leaders on low-performing career/technical programs;
 - ◆ make the senior year count for career-oriented students in the same way that it counts for students taking Advanced Placement courses.

- States that cannot afford to develop end-of-course exams can take these actions:
 - ◆ Adapt state licensing exams in certain fields.
 - ◆ Use exams developed by community and technical colleges for similar fields.
 - ◆ Use industry certification exams.
- All exams should meet certain criteria. They must:
 - ◆ assess whether students can 1) read, understand and communicate in the language of the career/technical field being studied; 2) use mathematics to solve problems from the workplace; and 3) understand technical concepts in a field of study.
 - ◆ meet industry standards of performance;
 - ◆ have the capacity to improve curriculum and instruction for future students; and
 - ◆ satisfy a panel of experts that they are aligned with academic and technical standards established for a particular career field.

These criteria can help states make career/technical education competitive in the marketplace and important to career-oriented students. They will help states establish performance goals for the programs and will give schools incentives and directions for improvement, particularly if improvement is tied to funding.

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Improving Middle Grades and
High School Transitions

**Ninth-Grade Follow-up
Survey Report**

North Carolina Middle Schools (5)

March 2002

Southern Regional Education Board

Introduction

All schools that are members of the Southern Regional Education Board's middle grades or high school networks are committed to raising student achievement and performance in the middle grades. Their goal is to prepare almost all students for college-preparatory courses in high school that meet higher graduation requirements. Too many students leave the middle grades ill-equipped to do high school work, and too many high schools continue to assign too many young people to low-level courses that leave them unable to pass employers' exams or to enter postsecondary education without taking remedial courses.

To increase the percentage of middle grades students who complete a rigorous core curriculum of reading, English/language arts, mathematics, science and social studies and who are assigned to challenging academic courses in grade nine, schools need information on how their former and current students perform in ninth grade. Eighth-grade students who completed SREB's 2000 Middle Grades Assessment have finished their ninth-grade year, the critical year of transition from middle grades to high school. Data were collected on the English, mathematics and science courses these students took as ninth-graders and the grades they received for each course.

In this report, information on courses taken and grades earned by students from your school is presented first. SREB received information on 411 students from your school. This information is linked to students' experiences and perceptions reported during the spring of their eighth-grade year. School data may be missing if: (1) the number of students in the follow-up study was too small to provide meaningful data; or (2) the follow-up data could not be linked to the student assessment data due to missing or inaccurate student identification numbers.

Data presented under the "All Schools" heading refer to the 3,098 students from 44 schools in the middle grades network and their receiving high schools who participated in the follow-up study. Data in the next column are from the 25 percent of high schools that enrolled the greatest percentage of students in college-preparatory classes in each subject area. Data may not equal 100 percent in all tables because of rounding errors and incomplete data. Student data records were included in the report even though all items may not have been completed.

These data indicate how middle grades learning experiences relate to performance in the first year of high school. The information can assist and guide middle grades teachers, administrators and students in better preparation for high school, and it can help high school teachers and leaders examine their ninth-grade assignment practices, instruction and access to extra help.

I. READINESS FOR HIGH SCHOOL: NINTH-GRADE FOLLOW-UP SURVEY INFORMATION

Readiness for high school can be measured by the percentage of ninth-grade students enrolled in college-preparatory courses, their success rates (grade C or above) in these courses and the credits earned.

High schools that enroll larger percentages of students from schools in the middle grades network in college-preparatory courses have success rates remarkably similar to high schools that have a more restricted enrollment pattern. If students are enrolled in higher-level classes, they are likely to be as successful as those students who are assigned to lower-level classes. In other words, both middle grades schools and high schools should make sure that almost all students are prepared to do higher-level course work and are assigned to college-preparatory courses in grade nine.

Table 1
Percentage of Ninth-Grade Students Enrolled in English Language and Literature Courses and Their Success Rates

| | North Carolina Schools % | | All Schools % | | Top 25% Schools in CP Courses Enrollment % | |
|---|--------------------------|--------------|---------------|--------------|--|--------------|
| | Enroll | Success Rate | Enroll | Success Rate | Enroll | Success Rate |
| Remedial or basic English 9 | 9 | 62 | 5 | 71 | 7 | 56 |
| Standard, general, or regular English 9 | 54 | 60 | 61 | 71 | 31 | 69 |
| College-prep English 9 | 24 | 96 | 25 | 91 | 56 | 86 |
| Other English and reading | 1 | 60 | 2 | 92 | 3 | 92 |

Only 25 percent of the students from middle grades schools were enrolled by school leaders and teachers in college-preparatory English language and literature courses in grade nine. Ninety-one percent of these students earned at least a “C” grade. Twenty-five percent of high schools enrolled 56 percent of students in college-preparatory English courses, and 86 percent of these students earned at least a “C” grade. The success rates of both groups of students were nearly the same, even though the top one-fourth of schools enrolled more than twice the number of students in higher-level courses. (See Table 1.)

Table 2
Percentage of Ninth-Grade Students Enrolled in Mathematics Courses
and Their Success Rates

| | North Carolina Schools % | | All Schools % | | Top 25% Schools in CP Courses Enrollment % | |
|--|--------------------------|--------------|---------------|--------------|--|--------------|
| | Enroll | Success Rate | Enroll | Success Rate | Enroll | Success Rate |
| Basic, general mathematics, pre-, basic Algebra or applied mathematics | 46 | 63 | 41 | 67 | 18 | 58 |
| College-prep Algebra 1 or integrated mathematics | 20 | 77 | 31 | 75 | 56 | 72 |
| Algebra 2 or other advanced mathematics | 3 | 100 | 5 | 90 | 15 | 95 |
| Geometry | 18 | 88 | 15 | 91 | 15 | 84 |
| Other mathematics | 1 | 100 | 2 | 79 | 2 | 91 |

In mathematics, 51 percent of students in all high schools were enrolled in college-preparatory Algebra 1 or higher-level courses, and at least 75 percent of those students earned a “C” grade or above. Schools that enrolled the most students in higher-level courses assigned 86 percent of incoming ninth-grade students to college-preparatory Algebra 1, Algebra 2, geometry or other advanced mathematics courses, and at least 72 percent or more of these students earned a “C” grade or above. (See Table 2.)

In science, only nine percent of students in all schools were enrolled in a college-preparatory science course. In the high schools that encouraged and pushed more students into higher-level courses, 38 percent of students were in college-preparatory level courses, and their success rates – at least a grade of “C” – were almost identical to those in all schools. (See Table 3.)

Table 3
Percentage of Ninth-Grade Students Enrolled in Science Courses and
Their Success Rates

| | North Carolina Schools % | | All Schools % | | Top 25% Schools in CP Courses Enrollment % | |
|--|--------------------------|--------------|---------------|--------------|--|--------------|
| | Enroll | Success Rate | Enroll | Success Rate | Enroll | Success Rate |
| General, environmental, earth, life, and other science | 60 | 70 | 19 | 67 | 16 | 56 |
| Basic or regular physical science or biology | 18 | 69 | 36 | 76 | 25 | 68 |
| Integrated science* | 0 | 0 | 24 | 79 | 12 | 88 |
| College-prep physical science | 1 | 100 | 5 | 81 | 21 | 79 |
| College-prep biology | 0 | 0 | 3 | 94 | 13 | 93 |
| Other advanced science | 0 | 0 | 1 | 78 | 4 | 78 |

* West Virginia considers Integrated Science a college-preparatory course.

These data suggest that more middle grades students could succeed in college-preparatory level academic courses if only the high school would give them the opportunity to enroll in such courses. Too many high schools are continuing to sort students into different levels of classes when many students can succeed in higher-level classes if they are allowed to take them and given the support they need. SREB's analysis of eighth-grade student achievement data indicates that too many students who scored in the upper half in reading, mathematics and science achievement tests are, in fact, enrolled in lower-level classes in ninth grade that do not prepare them for education beyond high school.

If high schools are going to err in assigning students to classes, they should err by enrolling too many students in college-preparatory classes rather than too few.

Table 4
Number of Credits Earned in Ninth Grade

| | North Carolina
Schools
% | All Schools
% |
|------------------------|--------------------------------|------------------|
| Three credits or fewer | 26 | 4 |
| Four credits | 2 | 4 |
| Five or more credits | 72 | 92 |

Studies of students who are at risk of dropping out of school indicate that if students earn three or fewer credits during their ninth-grade year, they are much more likely to dropout of school than those students earning more credits. In the sample of students followed in this study, four percent earned three or fewer credits in ninth grade.

Table 5
Percentage of Students Who Failed One, Two, or More Courses in the Ninth-Grade Year

| | North Carolina
Schools
% | All Schools
% |
|----------------------------|--------------------------------|------------------|
| Pass all courses | 76 | 81 |
| Fail one course | 13 | 11 |
| Fail two courses | 7 | 5 |
| Fail three or more courses | 5 | 3 |

About one in five students from the middle grades network fails at least one course in the ninth grade. Eighth- and ninth-grade teachers should work together to align expectations, curriculum and performance criteria so that the percentage of students failing courses in ninth grade is reduced significantly.

II. EIGHTH-GRADE EXPERIENCES AND PERCEPTIONS LINKED TO NINTH-GRADE PERFORMANCE

Three middle grades experiences are associated with students taking and succeeding in higher-level courses in grade nine. These experiences are:

1. studying something called algebra in the middle grades;
2. reading a great number of books in grade eight; and
3. expecting to graduate from college.

Middle grades schools that want to make sure students are ready for college-preparatory work in high school will teach only pre-algebra or more advanced mathematics courses in grade eight, require students to read widely, and encourage them to think about education beyond high school.

Middle grades students are naturally curious about the world around them and how they fit into it. Schools that capitalize on that curiosity by providing guidance and advice on what education is required for various careers and professions encourage students to set both long- and short-term goals.

The following table reports the ninth-grade performance of students who said they had something called algebra in the middle grades and those who said they did not. The second table compares the number of books read in the eighth-grade year to enrollment in college-preparatory English in ninth grade. The greater the number of books read, the more likely students were enrolled in college-preparatory English. The last table reports ninth-grade enrollment in college-preparatory courses for those students who said they expect to graduate from college. Only those students who answered in the affirmative on the question are included in the data.

Table 6 shows that across the middle grades network, 62 percent of students who had something called algebra in the middle grades were enrolled in college-preparatory mathematics in ninth grade, and 85 percent of these students earned at least a "C" or above. By contrast, high-enrollment schools enrolled 82 percent of students who had algebra in the middle grades in college-preparatory courses with virtually the same success rates as high schools that assigned fewer students to higher-level mathematics courses. Slightly more than one-third of students in all schools and two-thirds of students in the high-enrollment schools were assigned to college-preparatory mathematics without the benefit of algebra in grade eight. At least two-thirds of these students were successful in higher-level mathematics. All high school faculty and parents should ask:

- Why aren't all students who had algebra in the middle grades enrolled in college-preparatory mathematics?
- What criteria are schools using to assign students to higher-level mathematics?

Table 6
Enrollment and Success Rate of Ninth-Grade Students in College-Preparatory Mathematics by Their Exposure to Algebra in the Middle Grades

| | North Carolina
Schools
% | All Schools
% | Top 25% Sites in
CP Math Courses
Enrollment
% |
|---|--------------------------------|------------------|--|
| Algebra in MG | | | |
| 9 th grade CP math
Enrollment | 48 | 62 | 82 |
| 9 th grade CP math
Success Rate | 84 | 85 | 81 |
| No Algebra in MG | | | |
| 9 th grade CP math
Enrollment | 29 | 35 | 68 |
| 9 th grade CP math
Success Rate | 87 | 73 | 66 |

Table 7
Enrollment in College-Preparatory English Courses in Ninth Grade by the Number of Books Read During Eighth Grade

| | North Carolina
Schools
% | All
Schools
% | Top 25% Sites in CP
English Courses
Enrollment
% |
|------------------|--------------------------------|---------------------|---|
| 0 to 2 books | 14 | 14 | 31 |
| 3 to 10 books | 24 | 27 | 59 |
| 11 books or more | 27 | 30 | 66 |

Students who read more in the middle grades are more likely to be enrolled in college-preparatory English courses in ninth grade. Table 7, however, indicates that only 30 percent of students in all schools who reported reading 11 books or more in the middle grades were enrolled in college-preparatory courses in ninth grade. More than twice as many students who read at least 11 books were enrolled in high-level courses in some schools. These high-enrollment high schools

encourage students who report reading very little to enroll in college-preparatory English, and they provide support to help them complete the course successfully.

Table 8
Percentage of Students Enrolled in College-Preparatory Courses in Ninth Grade Who Expect to Graduate from College

| | North Carolina
Schools
% | All
Schools
% | Top 25% Sites
in CP Courses
Enrollment
% |
|--|--------------------------------|---------------------|---|
| <p style="text-align: center;">CP English Courses</p> CP English 9, other English (journalism, business, debate), reading | 26 | 29 | 62 |
| <p style="text-align: center;">CP Mathematics Courses</p> CP Algebra 1, Algebra 2, geometry, integrated mathematics | 41 | 54 | 80 |
| <p style="text-align: center;">CP Science Courses</p> CP physical science, CP biology, other advanced science | 1 | 11 | 43 |

Table 8 shows that in all schools almost twice as many students who expect to graduate from college are enrolled in college-preparatory mathematics than are enrolled in college-preparatory English courses. Only 11 percent of students who expect to graduate from college are enrolled in college-preparatory science classes. However, high enrollment schools have significantly more students in all college-preparatory classes. These schools help students achieve their dreams.

III. NINTH-GRADE PLACEMENT PRACTICES

Wide variations exist in the practices used by schools to place students either into college-preparatory courses in English, mathematics and science or into lower-level classes. It appears that some schools push their students into courses with more challenging content, while other schools are content to sort students into traditional classes. Lower-enrollment schools continue to fit the curriculum to the perceived ability of students, while high-enrollment schools recognize that all students need to complete a more challenging curriculum and proceed to enroll students into college-preparatory courses.

Table 9
Percentage of Ninth-Grade Students Who Earned a "D" or an "F" in CP
and Lower-Level Courses by Eighth-Grade Achievement Quartiles

| | Low
Quartile | 2 | 3 | Top
Quartile |
|----------------------------|-----------------|----|----|-----------------|
| English Courses | | | | |
| CP English | 23 | 16 | 10 | 4 |
| Low-level English | 47 | 31 | 23 | 8 |
| Mathematics Courses | | | | |
| CP mathematics | 47 | 31 | 16 | 9 |
| Low-level mathematics | 42 | 37 | 25 | 16 |
| Science Courses | | | | |
| CP science | 48 | 23 | 13 | 5 |
| Low-level science | 44 | 33 | 16 | 8 |

Students who took the eighth-grade reading test and scored in the lowest two quartiles were about twice as likely to fail ninth-grade English if they were placed in a lower-level English course rather than a college-preparatory course. Only students with mathematics and science achievement in the lowest quartile had a slightly higher failure rate in grade nine if they were enrolled in higher-level courses. Table 9 shows clearly that *enrollment in more demanding courses does not result in more failures.*

Every district needs to ask: How are school leaders, counselors and teachers placing students in grade nine classes? It appears that factors such as attendance, background and behavior may be determining placement and may fail to recognize the potential of many students. Students who can achieve but who may have other problems seem to be placed almost automatically in lower-level classes in some schools. Inappropriate placement may result in poor attendance, attitude and behavior problems.

Each high school needs to ask the following questions:

- Regardless of achievement, why do students have a lower failure rate in higher-level courses than in lower-level courses?
- Do lower-level courses expect so little that students stop trying and believing that they can do much or that school does matter?
- Are teachers sorted so that the best teachers who are most experienced and knowledgeable teach the "best students," while new and weaker teachers are assigned to lower-level courses?

- Do schools that place more students in higher-level courses also provide them with extra help and support?
- Do students in higher-level courses perform at a higher level to match expectations?
- Are materials used in college-preparatory courses more interesting?

Answers to these questions should reveal if the school has a climate and culture necessary for student success. Schools that have high expectations, that demand students' best efforts, and that provide extra help and support to boost student confidence have students who succeed. Similarly, a school that sets high expectations for teachers, demands their best efforts and supports them as professionals has a staff that expects more of students and helps them achieve high standards.

IV. ACTIONS MIDDLE GRADES AND HIGH SCHOOLS CAN TAKE TO IMPROVE TRANSITION

Middle grades schools and high schools can work together to ensure that almost all students complete college-preparatory English in grades nine and 10 and college-preparatory algebra and geometry by the end of grade 10. They can provide information to students and their families about the importance of higher-level courses in high school to college and career aspirations.

The following actions are steps schools can take to accelerate the percentage of students completing at least two years of college-preparatory English and college-preparatory algebra and geometry by the end of grade 10. Middle grades and high schools must work together to inform students and families about the importance of higher-level courses to career and college aspirations.

Middle grades schools can:

- change the grade eight mathematics curriculum so that all students complete either pre-algebra or Algebra 1 successfully;
- expect all students to read 25 books or the equivalent across the curriculum each year in the middle grades;
- identify students in grade seven who may have difficulty completing a challenging curriculum in grade nine, and take steps to increase their instructional time in reading, English and mathematics;
- place struggling students in an accelerated curriculum with the best teachers;
- take steps to provide all middle grades students in grades seven and eight with teachers who have at least a minor or major in the content area they are assigned to teach; and
- work with students and families to educate them about which courses lead to greater achievement and to develop a five-year educational plan for high school and one year beyond.

High schools can:

- provide catch-up courses, double periods and extra help for students who need extra instruction and time to meet higher course standards;
- re-think placement practices and take steps to increase annually the percentage of entering ninth-grade students assigned to college-preparatory English, mathematics and science courses;
- take immediate steps to enroll at least the same percentage of incoming ninth-graders in college-preparatory courses as high-enrollment schools;
- teach all students to the same challenging standards, provide extra help and extra time for those who need it, and require students who earn below a “C” grade at any time to spend extra time and get extra help; and
- appoint a special committee composed of teachers to study current placement practices. The committee should visit high schools that enroll a much higher percentage of ninth-graders in college-preparatory courses, and they should be responsible for developing a plan to enroll more students in higher-level classes while reducing failure rates.

Together, middle grades and high school leaders can:

- organize vertical teams of middle grades and high school teachers in English, mathematics and science to align curriculum and performance standards to the level needed for challenging high school studies;
- work together to orient families, middle grades students and teachers about the rising workplace and high school graduation requirements and the importance to students of a challenging program of studies in high school; and
- convene panels of high school and middle grades teachers in language arts, mathematics and science to identify readiness indicators that can be used to assess if students are prepared for college-preparatory work in grade nine. For example:

Literacy Indicators

- Read a book outside of class and demonstrate understanding monthly.
- Complete short writing assignments of one to three pages weekly.
- Revise essays and other written work to improve quality often.
- Write in-depth explanations often.
- Discuss what is read in English classes with other students often.
- Read technical books/manuals to complete vocational assignments often.
- Use word processing to complete assignments often.

Who is a dropout?

Non-high school completers who are...

- ✓ Enrolled in a community college or GED course.
- ✓ Not enrolled (without a valid reason) on the 20th day of the current school year.
- ✓ Youth incarcerated in an adult facility.

Dropouts are *not*:

- ✓ Students who transfer to another public or private school.
- ✓ Students who are being home-schooled.
- ✓ Students on medical leave or enrolled in a drug treatment facility.
- ✓ Expelled students (by state statute).

(Federal government counts expelled students as dropouts)

Four Common Dropout Rates

1. Annual or event rate

- Percentage of students who dropped out in a given year.
- Reported for the prior year.
- 9th – 12th grade or 7th – 12th grade
- Duplicated or unduplicated

1. Annual or event rate (cont.)

- Duplicated, 9th-12th grade rate used in ABCs calculations.
- Decreasing over last three years:
 - 1998-1999: 6.8%
 - 1999-2000: 6.4%
 - 2000-2001: 5.7%
- NC ranks 32nd nationally
- Ranges from 1.9% to 10.7%

Table 2. - Event dropout rates for grades 9-12, by state:1993-94 to 1997-98

| State | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-00 | 2000-01 |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Alabama ¹ | - | - | - | 5.3 | 4.8 | 4.4 | | |
| Alaska | - | - | - | 4.9 | 4.6 | 5.3 | | |
| Arizona ¹ | - | - | - | 10 | 9.4 | 8.4 | | |
| Arkansas | 5.3 | 4.9 | 4.1 | 5 | 5.4 | 6 | | |
| California | - | - | - | - | - | - | | |
| Colorado ¹ | - | - | - | 6 | 5.8 | - | | |
| Connecticut | 4.9 | 5 | 4.8 | 3.9 | 3.5 | 3.3 | | |
| Delaware | 4.6 | 4.6 | 4.5 | 4.5 | 4.7 | 4.1 | | |
| District of Columbia | 9.6 | 10.6 | - | - | 12.8 | 8.2 | | |
| Florida | - | - | - | - | - | - | | |
| Georgia | 8.7 | 9 | 8.5 | 8.2 | 7.3 | 7.4 | | |
| Hawaii | - | - | - | - | - | - | | |
| Idaho ¹ | - | - | - | 7.2 | 6.7 | 6.9 | | |
| Illinois ¹ | - | - | - | 8.8 | 6.9 | 6.5 | | |
| Indiana | - | - | - | - | - | - | | |
| Iowa | 3.2 | 3.5 | 3.1 | 2.9 | 2.9 | 2.5 | | |
| Kansas | 5 | 5.1 | 4.7 | 4.6 | 4.2 | - | | |
| Kentucky | - | - | - | - | 5.2 | 4.9 | | |
| Louisiana | 4.7 | 3.5 | 11.62 | 11.62 | 11.42 | 10 | | |
| Maine | 3.1 | 3.4 | 3.1 | 3.2 | 3.2 | 3.3 | | |
| Maryland ¹ | - | - | - | 4.9 | 4.3 | 4.4 | | |
| Massachusetts | 3.7 | 3.6 | 3.3 | 3.4 | 3.2 | 3.6 | | |
| Michigan | - | - | - | - | - | - | | |
| Minnesota | 5.1 | 5.2 | 5.3 | 5.5 | 4.9 | 4.5 | | |
| Mississippi | 6.1 | 6.4 | 6.2 | 6 | 5.8 | 5.2 | | |
| Missouri | 7.1 | 7.1 | 6.6 | 5.8 | 5.2 | 4.8 | | |
| Montana | - | - | 5.6 | 5.1 | 4.4 | 4.5 | | |
| Nebraska | 4.6 | 4.5 | 4.5 | 4.3 | 4.4 | 4.2 | | |
| Nevada | 9.8 | 10.3 | 9.6 | 10.2 | 10.1 | 7.9 | | |
| New Hampshire | - | - | - | - | - | - | | |
| New Jersey ¹ | - | - | - | 3.7 | 3.5 | 3.1 | | |
| New Mexico | 8.1 | 8.5 | - | 7.5 | 7.1 | 7 | | |
| New York | - | - | - | - | - | - | | |

Table 2. - Event dropout rates for grades 9-12, by state: 1993-94 to 1997-98

| State | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-00 | 2000-01 |
|---------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| North Carolina | - | - | - | - | - | 6.812 | 6.51 | 5.78 |
| North Dakota | 2.7 | 2.5 | 2.5 | 2.7 | 2.8 | 2.4 | | |
| Ohio | - | 5.3 | 5.4 | 5.2 | 5.1 | 3.9 | | |
| Oklahoma | - | - | - | - | - | 5.2 | | |
| Oregon | 7.3 | 7.1 | 7 | - | - | 6.5 | | |
| Pennsylvania | 3.8 | 4.1 | 4 | 3.9 | 3.9 | 3.8 | | |
| Rhode Island | 4.9 | 4.6 | 4.6 | 4.7 | 4.9 | 4.5 | | |
| South Carolina | - | - | - | - | - | - | | |
| South Dakota ¹ | - | - | - | 4.5 | 3.1 | 4.5 | | |
| Tennessee ¹ | - | - | - | 5.1 | 5 | 4.6 | | |
| Texas | - | - | - | - | - | - | | |
| Utah | - | 3.6 | 4.4 | 4.5 | 5.2 | 4.7 | | |
| Vermont ¹ | - | - | - | 5 | 5.2 | 4.6 | | |
| Virginia ¹ | - | - | - | 4.6 | 4.8 | 4.5 | | |
| Washington | - | - | - | - | - | - | | |
| West Virginia | - | 4.2 | 3.8 | 4.1 | 4.1 | 4.9 | | |
| Wisconsin ¹ | - | - | - | 2.7 | 2.8 | 2.6 | | |
| Wyoming | - | 6.7 | 5.7 | 6.2 | 6.4 | 5.2 | | |

--Data not available.

1. States were asked to report on an October through September cycle. However, this state reported on an alternative July through June cycle in the 1996-97 and 1997-98 collections.

2. Effective in the 1995-96 school year, Louisiana changed its dropout data collection from school-level aggregate counts reported to districts to an individual student-record system. The apparent increase in the dropout rate is partly due to the increased ability to track students.

NOTE: Of the 37 states and the District of Columbia, that reported dropouts in 1998-99, 27 said that they adhered exactly to the standard definition and collection procedures. See appendix C for a detailed discussion of the CCD dropout definition.

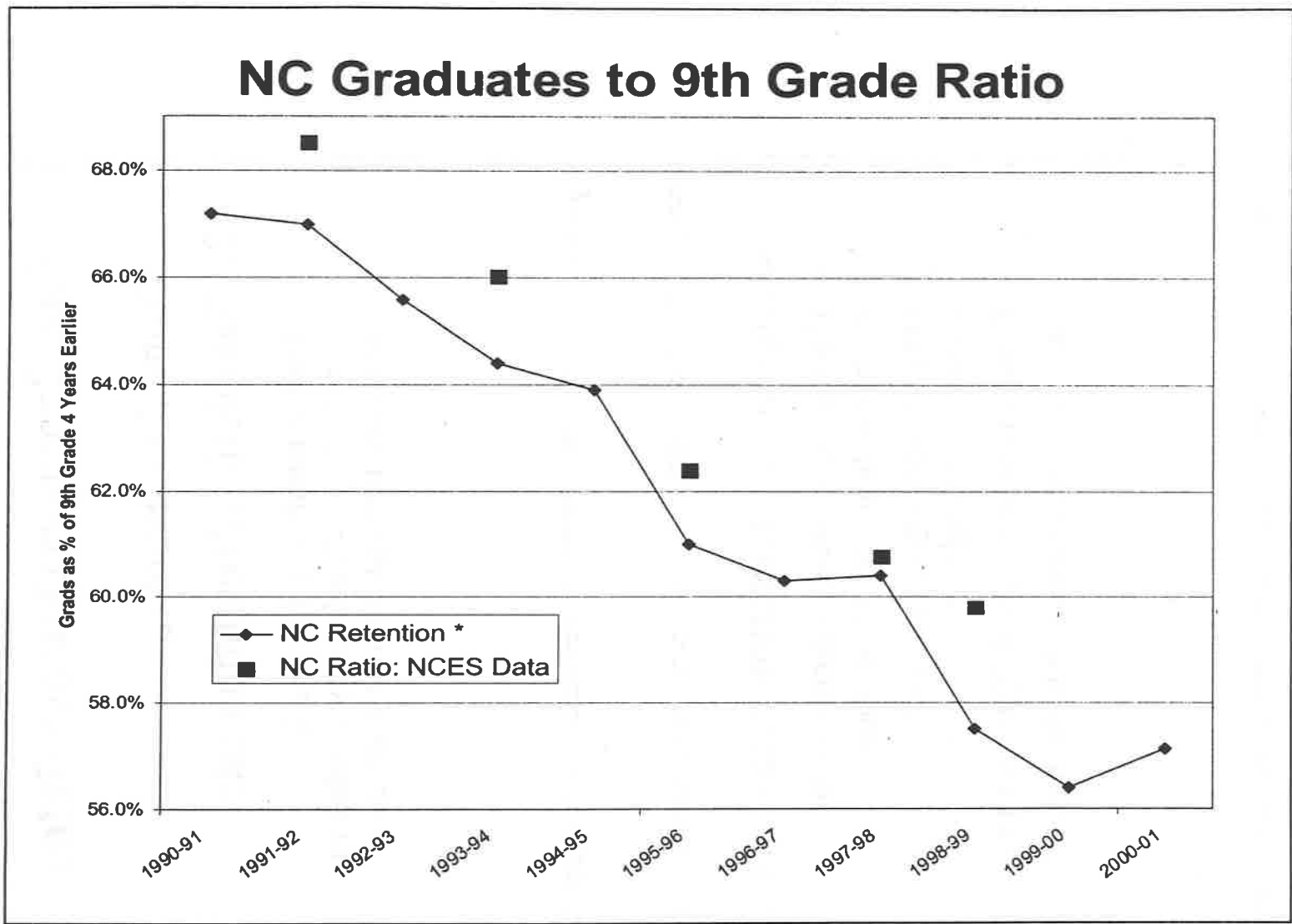
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data, "Local Education Agency Universe Survey" (various years) and "Local Education Agency Universe Dropout File" (1998-99).

Four Common Dropout Rates

1. Annual or event rate
2. Completion / retention rate
 - Divide number of 12th graders completing high school by number of students in 9th grade four years earlier.

2. Completion / retention rate (cont.)

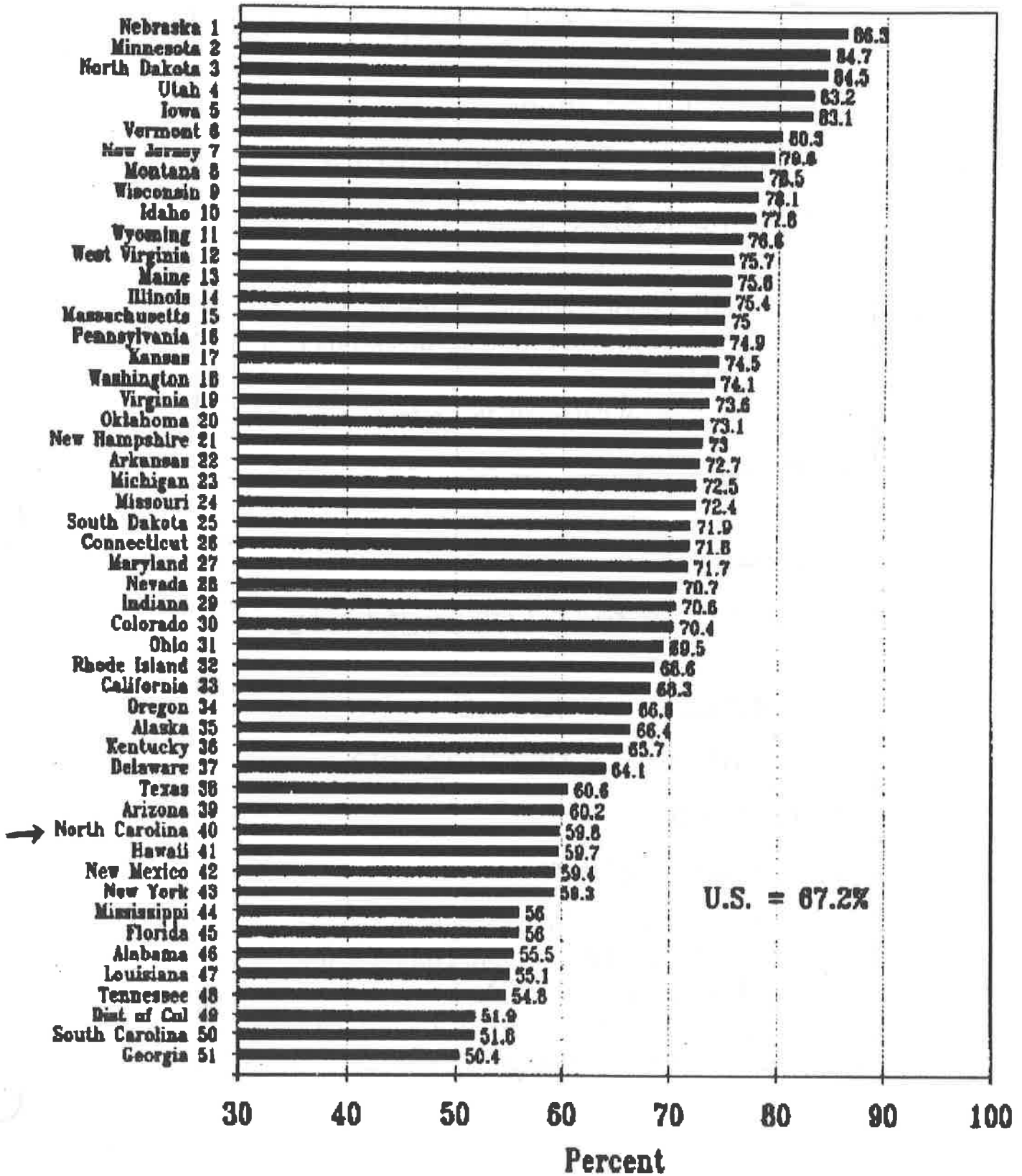
- Decreasing because of increases in nonpromotion rates and dropout rates.
- Helps to identify high school completion trends.
- Completion rate in 2000-2001: **57.1%**
- North Carolina ranks 40th in the nation.



Source: Statistical Profile: Public Schools of North Carolina; 1993 through 2000. State Board of Education

Postsecondary Education Opportunity, August, 2000: Data Files from Nat'l. Center for Education Statistics.

Public High School Graduation Rates 1999



Four Common Dropout Rates

1. Annual or event rate
2. Completion / retention rate
3. Longitudinal rate
 - For each cohort, divide the number of high school graduates by the number of students in that cohort at the entrance of 9th grade.
 - NC cannot calculate this rate.

Four Common Dropout Rates

1. Annual or event rate
2. Completion / retention rate
3. Longitudinal rate
4. Census status rate
 - Percentage of people in a given age group (i.e. 18 to 24) that did not complete high school or obtain a GED.
 - Census data: 20.1% dropout rate for 18-24.

Common Methods of Measuring School Dropouts

| | Annual Dropout Rate | Completion/Retention Rate | Longitudinal Dropout Rate | Census Status Rate |
|----------------------|--|---|--|---|
| Description | Measures the percentage of 7 th - 12 th or 9 th to 12 th grade students who drop out of school during one school year. Can be duplicated or unduplicated. | Measures the percentage of students from a class of 9 th graders who graduate or complete high school four years later. | Measures the percentage of students from a class of 9 th graders who drop out before completing high school. | Estimates the percentage of a given age cohort (i.e. 18 to 24) that does not have a high school degree or a GED. |
| Calculation | Divide the number of students who drop out during a school year by the total number of students enrolled that year. | Divide the number of students who complete 12 th grade by the number of students in the 9 th grade four years earlier. | Divide the number of students who complete 12 th grade by the number of students in the original 9 th grade class. | Divide the number of dropouts in the age cohort by the number of people in the cohort. |
| Advantages | <ul style="list-style-type: none"> • Measure of annual performance • Requires only one year of data • Can be calculated for any school/district with students in any of the grades covered • Can be disaggregated by grade level | <ul style="list-style-type: none"> • More consistent with the public's understanding of a dropout rate • Districts have more time to encourage dropouts to return to school before being held accountable • More stable measure over time • More positive indicator than the dropout rate, measuring school success rather than failure | <ul style="list-style-type: none"> • More consistent with the public's understanding of a dropout rate • Districts have more time to encourage dropouts to return to school before being held accountable • More stable measure over time • Provides the most complete description of dropout rates | <ul style="list-style-type: none"> • Provides a snapshot of the educational attainment of the workforce • Takes into account dropouts who return to school |
| Disadvantages | <ul style="list-style-type: none"> • Produces the lowest rate of any method • May not correspond to the public's understanding of a dropout rate | <ul style="list-style-type: none"> • Combines the effects of increasing nonpromotions and dropouts • Does not produce a dropout rate by grade | <ul style="list-style-type: none"> • Requires multiple years of data; one year of bad data can remove a student from the measure • Program improvements may not be reflected for several years, and districts are not held accountable for some dropouts until years after they drop out • Does not produce a dropout rate by grade | <ul style="list-style-type: none"> • Cannot be used in accountability systems because it is an estimate • Very difficult to use at the school or district level |
| Remark | The 9 th - 12 th grade duplicated rate is used in the ABCs.

5.7% in 2000-2001 | Also calculated for North Carolina.

57.1% in 2000-2001 | North Carolina does not currently have the technology required. | U.S. Census reports the percentage of 18 to 24-year-olds in North Carolina without a diploma or <u>GED</u> .

20.1% in 2000 |

Data Quality Issues

- ✓ Some students counted as dropouts actually transfer to other schools.
- ✓ Some students counted as transfer students actually drop out.
- ✓ Some students move out of the state or country and are counted as dropouts.

Data Quality Issues

- ✓ Individual-level data on student withdrawals is not available at the state level.
- ✓ The new NCWISE system has the potential to provide state-level access.