The National Landscape for Applied Baccalaureate in STEM Fields

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Overview

• Looking back ~
  
  Lessons Learned from 50-state Policy Study of Applied Baccalaureate Degrees

• Looking ahead ~
  
  The Applied Baccalaureate Degree: An Emerging Pathway to Technician Education
Trends in State Adoption of Applied Baccalaureate

Modest Start, Big Finish!
States with AB Degrees: 1970s

- 2-year only
- 4-year only

Bragg & Ruud (2011) 50 State Inventory
States with AB Degrees: 1980s

- 2-year only
- 4-year only

Bragg & Ruud (2011) 50 State Inventory
States with AB Degrees: 1990s

Bragg & Ruud (2011) 50 State Inventory
States with AB Degrees: 2000s

Bragg & Ruud (2011) 50 State Inventory
States with AB Degrees: 2000s

- 4-year only
- 2-year/4-year
- New Developments

Bragg & Ruud (2011) 50 State Inventory
Definitions of Applied Baccalaureate (AB) Degrees

“The Devil is in the Detail”
Transfer Pathway

Transfer \hspace{2cm} \rightarrow \hspace{2cm} \text{Baccalaureate}

\hspace{2cm} \rightarrow \hspace{2cm} \text{Terminal}
AB Pathway

Transfer

Terminal

Applied Baccalaureate
The Applied Baccalaureate is.....

“...a bachelor’s degree designed to incorporate applied associate courses and degrees once considered as ‘terminal’ or non-baccalaureate level while providing students with the higher-order thinking skills and advanced technical knowledge and skills so desired in today’s job market.”

Townsend, Bragg, & Ruud (2008, p. 4)
Your Definition

• How do you define the Applied Baccalaureate (AB) degree?

• What AB degrees are offered by your institution, and what do the curricular pathways look like?
## Example AB Pathway

### Associate Degrees

<table>
<thead>
<tr>
<th>Degree</th>
<th>Field</th>
<th>Inst. Awarding Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAS</td>
<td>Information Technology</td>
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### Baccalaureate Degrees

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<tbody>
<tr>
<td>BAS</td>
<td>Computer Technology</td>
<td>State University Name</td>
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"Pure" AB Pathway: AAS to BAS

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Office of Community College Research and Leadership, University of Illinois at Urbana-Champaign
## AS to BAS Pathway

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*Office of Community College Research and Leadership, University of Illinois at Urbana-Champaign*
AAS to BS Pathway

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Office of Community College Research and Leadership, University of Illinois at Urbana-Champaign
## AS to BS Pathway

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<td>BS</td>
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AB Pathway Models

Model of Applied Baccalaureate Degree Curricula

Applied Baccalaureate Degree

Career Ladder
- Stepwise academic and technical coursework

Management Capstone
- Business and management-focused coursework

Upside-Down
- General education coursework leads to field specific baccalaureate

Completion
- General or liberal studies coursework leads to general baccalaureate

Hybrid
- Blend or convergence of other models

Applied Associates Degree
# AB Debates

<table>
<thead>
<tr>
<th>Supporters’ Arguments</th>
<th>Critics’ Arguments</th>
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<tr>
<td>• Address workforce needs in the geographic region and beyond</td>
<td>• Questions about rigor and quality of applied baccalaureate degrees</td>
</tr>
<tr>
<td>• Address calls to increase numbers of college graduates</td>
<td>• Uncertainty about outcomes for students and graduates</td>
</tr>
<tr>
<td>• Improve international competitiveness</td>
<td>• Highly specialized training programs may prepare people for jobs that will not exist in the near future</td>
</tr>
<tr>
<td>• Promote equity in postsecondary education</td>
<td></td>
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But, very little research is available to provide evidence of benefits or drawbacks.
The Applied Baccalaureate Degree: 

OCCRL’s current research
Applied Baccalaureate and ATE

• Examine AB degree pathways through the lens of the National Science Foundation’s Advanced Technological Education (NSF-ATE) program
  – Identify AB degree pathways in technician education
  – Analyze pathway designs, implementation, and outcomes
  – Uncover promising and exemplary practices related to applied baccalaureate degrees

• In order to…
  – Provide college administrators and instructors, employers and researchers with detailed information about how AB degree programs operate and meet students' and employers' needs

http://occrl.illinois.edu/projects/nsf_applied_baccalaureate
To Be Accomplished in Two Phases

• **Landscape Study** (May 2011 – Feb 2012)
  – Descriptive analysis using surveys, website reviews, and document analysis to determine the shape and scope of applied baccalaureate degrees in technician education

• **Participatory Field Study** (Mar 2012 – 2013)
  – Case studies with 6–8 NSF-ATE projects and centers to uncover promising ideas and proven practices related to applied baccalaureate degrees
Landscape Study Focus

• Identify baccalaureate degree pathways in technician education
  – Survey of NSF-ATE Principle Investigators
  – Led to the discovery of 95 baccalaureate degree pathways

• Exploring the curricula that make up those degree pathways
  – Website search and document review of course requirements and sequences for all institutions involved in each baccalaureate degree pathway

• Describe characteristics of AB degree pathways
  – Follow-up survey and in-depth website reviews to examine identified AB degree pathways
New baccalaureate degree pathways are emerging in STEM education

- Almost 10% of all identified baccalaureate degree pathways were in some stage of development, with plans in some cases to enroll the first class of students as early as Fall 2012

- 70% of the AB degree pathways that were nominated as “notable” by survey respondents had been developed within the past ten years
• **Baccalaureate degree pathways are dominated by variety**

  – Across the 95 identified baccalaureate degree pathways…
    • More than 30 different fields of study were reported
    • Pathways were initiated by a number of sources, including associate-degree granting institutions, baccalaureate-degree granting institutions, NSF-ATE-funded centers, or a combination of sources
    • 20% of cases reported affiliation with community college baccalaureate degrees
    • AB degree pathways exhibited all curricular models:
      – Career ladder
      – Management capstone
      – Upside-down
      – Completion
      – Hybrid
Sharing What We’ve Learned

Baccalaureate Degree Pathway Fields of Study
• **Baccalaureate degree pathways are dominated by variety**

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• Within STEM programs of study offered by postsecondary education, AB degree pathways have a strong presence

  – Of the 51 degree pathways for which we found evidence on institutional websites, 68.6% were AB degree pathways

  – Many of these AB degree pathways articulate applied associate degrees (e.g., AAS) to traditional baccalaureate degrees (e.g., BS). In fact, this is the case for 8 of the 10 degree pathways that participants identified as “notable” in this study
• **Applied and transfer associate degree programs can exhibit strikingly similar characteristics**

  – Few differences in 5 of 8 cases
    • In 4 of these 5 cases, we were able to confirm that the nontransferable curricula existed first
    • Modifications related to mathematics or writing classes, and affected 1 (3 cases), 2 (1 case) or 5 (1 case) classes of the entire associate degree curricula

  – The remaining 3 cases, had more substantial differences
    • Between 30% and 60% of the curricula differed
    • Some respondents described different underlying purposes
    • Yet, in one case, online program descriptions for the two degrees were almost identical
Limited evidence exists about the outcomes and impacts of AB degree programs and pathways

- In over half of the cases, information about the availability of student-level outcomes data and recruitment of underrepresented student populations were unknown by survey respondents

- Several reasons were cited:
  - Small number of faculty (often 1 or 2) who manage these programs not having time and staff support to pursue evaluation and tracking efforts
  - Lack of reporting systems that cross institutional boundaries
• Some respondents avoid applied language due to perceived stigma

  – Concerns centered around:
    • Lack of recognition of applied baccalaureate degrees with state policy contexts
    • Lowering perceptions institutional prestige for those who identify with applied baccalaureate degrees
Sample Areas for Future Inquiry

• **Pathway development and sustainability**
  – What factors, resources, and environments promote AB degree program development and sustainability?

• **Outcomes, measurement, and data dissemination**
  – What are the intended and actual outcomes of AB degree programs?
  – How are these outcomes measured and shared?

• **Replicability**
  – What can be learned from one AB degree program or pathway to be adopted or adapted to another setting?

• **Comparisons of terminal and transferable associate degrees**
  – What is the difference between preparation for the workforce versus academic transfer?
  – Who is best served by differing curricular designs?
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