Chapter 2
Conceptual Elements for Performance Assessment for Faculty and Student Learning

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Abstract This conceptual chapter clarifies elements for performance assessment that hold promise for designing performance assessments, including capstone and portfolio assessments. Elements were originally determined by Alverno College faculty from their practice in 1973 and combined with an internal and external literature review of relevant theoretical frameworks across time. This literature review included many early citations of such concepts as active learning, self-reflection and self-monitoring, assessment and judgment in relation to criteria, and the role of samples of performance in assessment. For this chapter, citations from literature external to the College and Alverno literature have been recently reviewed and illuminated for the following elements of performance assessment, also articulated as learning processes, transformative learning cycles, and learning outcomes. (1) Self-reflection on learning own abilities; (2) Self assessing performance and using feedback to improve it over time; (3) Learners developing metacognitive performance; (4) Learners developing professional expertise; and (5) Learners developing identity as a self-sustained and unique learner, contributor, and professional.

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Takeaways

- Self-reflection on learning one's own abilities is an early element that the faculty worked at capturing through their use of self assessment.
- Self assessment leading to self-confidence and self-efficacy emerged as central to learning.
- Integration of subject matter and learned abilities, with subsequent adaptation and transfer of learning outcomes to unscripted settings is a predominant goal for education.
- Learners developing professional expertise related to self assessing role performance.
- Learners developing an identity as a self-sustained and unique learner contributor, and professional, is one of the more challenging learning outcomes for educating professionals.

2.1 Introduction

Most authors agree that determining learning outcomes as an integration of subject matter and learned abilities, an essential element for performance assessment that leads learners to become competent professionals, begins the faculty learning process, because most faculty begin this task to exercise their professional responsibility and apply their expertise. Further, faculty members often start by making student learning outcomes more explicit. For example, as Alverno College faculty worked to accomplish this, they brought theoretical frameworks underlying their disciplines to the task, thinking them through and deciding what content and abilities should be learned in their courses. Loacker and Palola described this process as early as 1981, and they gave examples of institutions that were joining them in carrying out this process.

2.2 Early Literature: Sources of Evidence for Early Practice

Thus, when Alverno faculty derived elements for performance assessment from their practice and the early literature, student opportunities for (1) self-reflection on learning one's own abilities was an early element that the faculty worked at capturing through their use of self assessment, where the "self" was the *agent* rather than the *object* of assessment. They videotaped each student on the first day of college as each gave a speech. Faculty members then engaged students in self assessing their performance, rather than their person.

Literature on performance assessment in higher education was lacking in the early 1970s, when Alverno was developing its student assessment as learning process. Alverno College had contracted the Educational Testing Service (ETS) to develop measures of their abilities as learning outcomes (or competences as they were then called) (Alverno abilities: Communication, Analysis, Problem Solving, Social Interaction, Valuing in Decision-Making, Effective Citizenship, Developing a Global Perspective, and Aesthetic Engagement). However, Alverno abilities were then and are now defined as complex capabilities of the person that can be taught, learned, assessed, observed in performance, and continually rethought and refined (Alverno College Faculty 1973/2010; Mentkowski 2006; Mentkowski and Sharkey 2011).

After a year of tryouts, ETS suggested that measures of these learning outcomes or competences would need to be faculty designed, because a technology for those kinds of assessments was not yet available at ETS. However, they noted that Lois Crooks of ETS was working to develop and validate the *In-Basket* (1973), an assessment she had designed to elicit performances. Alverno faculty adapted this measure for a part of their first *Mid-Program Performance Assessment of General Education* and studied it for establishing validity.

By the 1980s, several pieces had been published that opened the door to better understanding of students and reflection on their learning, as well as self assessment and the performance assessment process and its validity. Each of these chapters and articles contributed to the early literature available to Alverno faculty (Alverno College Faculty 1979, revised 1985 and 1994; Anastasi 1980; Boud et al. 1985; Friedman and Mentkowski 1980; Friedman et al. 1980, 1982; Loacker et al. 1986; Loacker and Jensen 1988; Loacker and Mentkowski 1982; Marton et al. 1984; Mentkowski and Doherty 1984; Mentkowski and Loacker 1985). This literature also stimulated the student and program assessment movement in higher education (Ewell 1985).

Because self assessment was part of Alverno's student as learning performance assessment process, a second element, (2) self assessment leading to self-confidence and self-efficacy emerged as central to learning (Alverno College Faculty 1979/1994; Bandura 1986). Thus, a third element began to emerge from faculty who were eliciting student samples of self assessment of their own performances. These samples, among other factors such as their teaching and learning in their disciplines, were helpful for faculty because they could see and imagine how students were experiencing their learning. This reinforced faculty members to continue to develop learning experiences for integrating subject matter and learned abilities (Alverno College Faculty 1976/2005; Anastasi 1980). These student samples became a further source of criteria and standards at Alverno.

Student samples were also being used for similar purposes, integration of coursework and abilities, at that time in some schools in K-12 education and in postgraduate education in the professions Alverno invited participants from across the educational spectrum: Alverno College, Milwaukee, Wisconsin; Bloomfield Hills Model High School, Bloomfield Hills, Michigan; Central Missouri State University, Warrensburg, Missouri; Clayton College and State University, Morrow, Georgia; Purdue University School of Pharmacy and Pharmacal Sciences, West

Lafayette, Indiana; South Division High School, Milwaukee, Wisconsin; Township High School District 214, Arlington Heights, Illinois; University of New Mexico School of Medicine, Albuquerque, New Mexico; and University of Wisconsin Medical School, Madison, Wisconsin. (Consortium for the Improvement of Teaching, Learning and Assessment (1992/June). (Funded by a grant to Alverno College from W. K. Kellogg Foundation (1989–1992).

From across the educational spectrum, faculty members began learning that integration of subject matter and learned abilities, with subsequent adaptation and transfer of *learning outcomes* (namely, integrated subject matter and learned abilities) to unscripted settings was a predominant goal for education, and consequently, for assessment (Alverno College Faculty 1979/1994; Boyatzis 1982; Loacker and Palola 1981; McClelland 1973). Gradually, element (5) professional role performances for developing identity as learners (Kegan 1982) and professionals (Argyris and Schön 1974; Schön 1973, 1983, 1987) emerged as well, especially given Schön's early conceptualization (1973) of such ideas as *reflective-practitioner, theory-in-use, reflection-in-action,* and *learning-in-use.* Schön's ideas also led to element (4) learners developing metacognitive performance.

2.3 Later Literature: Sources of Evidence for Current Practice

The later literature confirms the first two elements of performance assessment. To prompt *self-reflection*, faculty members across higher education may engage students in mentally creating narratives that are personally meaningful and reflect their values, relying on immediate experience in context (Baxter Magolda and King 2007). Students also listen to others' stories of similar events, or reflect on their own performance in situations (Bandura 1997; Boud and Walker 1998; Mentkowski et al. 2000). As faculty members listened to student stories, they began to notice particular patterns on how students think and learn, as Perry (1970, 1980) demonstrated over four decades ago. Alverno College confirmed these patterns with an independent, longitudinal study (Mentkowski et al. 1983).

To prompt *self assessment* ("self" is not the *object* but the *agent* of assessment), faculty members may engage students in deepening their learning by observing, analyzing and interpreting, and judging their own role performances in various situations in relation to criteria; and then encouraging learners to plan for further learning to see how to improve it. Central to this learning process is the role of an instructor, who provides *accurate, diagnostic, conceptual, and prescriptive feedback on performance* to students. If learners are to use feedback to improve their performance over time, faculty feedback is essential. Alverno learners developed their skill in learning to use feedback (see Mentkowski et al. 2000, Appendix H: Developing Perspectives of Students on Self Assessment, Using Feedback, Commitment to Improvement, and Role of Criteria, for beginning, intermediate, and advanced student perspectives, pp. 447–451). Georgine Loacker edited *Self*

Assessment at Alverno College, which provides a plethora of examples of instructors promoting self assessment and observing it in their students' learning (Alverno College Faculty 2000).

Peers and community professionals may also provide feedback and make judgments on standards of practice. A professional school graduate faculty may consider these perspectives when judging whether and how students have met criteria and standards (Gruppen et al. 2000). Faculty members are often learning what has been effective and what instructional methods needed changing. Instructors may model this analytic learning process by providing examples of where a student succeeded, and what needs work (Alverno College Faculty 2015).

To prompt a third element of performance assessment that involves integrating subject matter and learned abilities, faculty members may stimulate students' integration of conceptual frameworks and intellectual and practical skills through studying and eliciting performance (American Association of Colleges and Universities 2011; Eraut 1994). Faculty members may also design pedagogically developmental assessments for students to practice integrating content and skills. When students also integrate constructs with learned abilities, they gradually become capable of demonstrating professional roles in their labs and internships. Faculty members have been learning how students build representations of knowledge integrated with abilities as observed in practice. Alverno faculty members have also been learning to make finer and more nuanced adjustments in what is pedagogically developmental.

Alverno students have learned to draw on their capacity for reasoning, for using metacognitive strategies as frameworks for connecting their learned abilities to actual performances through simulated performance assessments. These metacognitive strategies or learned abilities assist students to recognize patterns, and enable them to think while they are performing—including about disciplinary frameworks. Thus, learners are restructuring their knowledge so they can adapt it to a scripted setting as a prelude to adapting their knowledge to an unscripted setting, again via a performance assessment. Thus, thinking metacognitively across knowledge-rich environments becomes essential to learning that lasts (Mentkowski et al. 2000). This leads to a third element, *learners developing metacognitive performance.* To prompt a fourth element, *learners developing professional expertise,* faculty often develop examples that assist professional school students to also adapt their *learning how to perform.* Here, faculty members who have professional experience can tap their own understanding for what it takes for their students to develop a picture of a performance in an interactive setting (which describes most professional roles). Such a performance assessment requires a learner to carefully observe a setting for clues for "knowing what to do when I don't know what to do."

Another transformative learning cycle that Alverno students experience in an ability-based curriculum is named Self Assessing Role Performance (Mentkowski et al. 2000). Such a process is essential for adapting and then transferring learning outcomes, even though other authors may use different languages for the development of expertise (Ericsson et al. 2006; Sternberg 1998). Transfer of learning has been further substantiated by Boyatzis et al. (1995) in their management

curriculum. Bransford et al. (2000) developed schema for generalizing transfer of learning. Hakel and Halpern (2005) argue that transfer can happen across physical, temporal, and conceptual space. Mestre (2005) edited a volume about transfer of learning from multidisciplinary perspectives. Both sources provide faculty with insights about what it means to transfer learning. Mestre also shows what it means to engage in cross-disciplinary and cross-professional learning and transfer.

2.4 Developing a Faculty-Designed *Mid-program Performance Assessment for General Education*

Faculty members may require students not only to practice but to demonstrate, adapt, and transfer *learned capacities*, defined as integration of learned abilities with patterns of performance, or dispositions of the person. Usually, faculty members design and construct performance situations that are unfamiliar to learners, so that faculty members can judge student capacities at integration and transfer (see Abromeit 2012; Mentkowski et al. 2012). (The first chapter, written for the proceedings of the Higher Learning Commission, and the second chapter prepared for an Education in the Professions: Division I Symposium, provided a description and analysis of Alverno's *Mid-Program Performance Assessment for General Education* that all current students complete between their second and third years at Alverno, usually about the time they enter their professional fields. The second chapter also described the validation process for this assessment.)

In the context of Alverno's faculty-designed *Mid-Program Performance Assessment for General Education,* students first complete a self-reflection and self assessment on their own. Following, trained faculty assessors who observe and assess performances from across the disciplines and professions, may continually learn that adaptation and transfer are an extension of integrating subject matter and learned abilities. This is because students must demonstrate their expertise through adapting their communication ability, integrated with their scientific reasoning and mathematics, along with their problem solving and quantitative reasoning abilities. They are required to demonstrate content integrated with abilities in an unfamiliar, but knowledge-rich environment in order to be successful. This summative performance assessment is combined with faculty assessor feedback and judgment of success or lack of success. Faculty assessors also draw out students by interacting with them on their ideas for further learning, whether or not a student has been successful on this summative assessment. Thus, faculty-designed performance assessments may become a source for reciprocal learning by both faculty and students. This is especially the case when a learner is unsuccessful, attends a reassessment workshop, and then is required to transfer her abilities to a different but related performance assessment.

As noted above, when students themselves began to view not only assessing their performance and using feedback to transform it, but also engaging in reflective learning, envisioning improved role performances, and then monitoring role performances in relation to criteria from diverse sources, they have experienced Self Assessing Role Performance, a transformative learning cycle. Here learners may then find that self assessment is a useful pathway to improvement across multiple, varied situations.

A fifth element, *learners developing an identity as a self-sustained and unique learner, contributor, and professional,* is one of the more challenging learning outcomes for educating professionals. Learners may take multiple paths, however unique, to engage their development of identity as a professional (Bebeau and Monson 2012; Gruppen et al. 2000; Mentkowski et al. 2000) This is a gradual learning process, but without faculty members who have been stimulating students to make connections, Alverno educational researchers have learned that not all learners may make them where they need to—in a professional context. Alverno faculty members have also learned that to stimulate this learning process, they need to provide developmentally appropriate examples that demonstrate relevance for the social learning of each professional role. Following such stimulation by professional school faculty, students may demonstrate the transformative learning cycle, Engaging Diverse Approaches, Views, and Activities. Most faculties observe that students learn independently before they learn interdependently. This usually requires some developmental restructuring of their thinking and reasoning, even as they begin to learn interdependently. Faculty members sense that this is a more sophisticated way of learning, because it is usually interactive. Learners may also strive for mutuality—learning to engage others as professionals, which faculty members often stimulate and simulate through internships and clinicals for students to develop learning outcomes (Mentkowski et al. 2000).

2.5 Development of Practice in Performance Assessment by Alverno Faculty Across Time

Over four decades, the Alverno College faculty has continually improved their practice in performance assessment with ongoing workshops conducted with faculty and academic staff via the Alverno Faculty Institute. These workshops occur semester-by-semester, and are usually conducted by the Council for Student Assessment. These workshops have consistently illuminated appropriate literature both external to the College and Alverno literature. Since 1976, its current Senior Scholar for Educational Research has maintained the literature review in the department of Educational Research and Evaluation (For these reviews, the reader may refer to Mentkowski and Loacker 1985; Mentkowski 1998; Fig. 2.1).
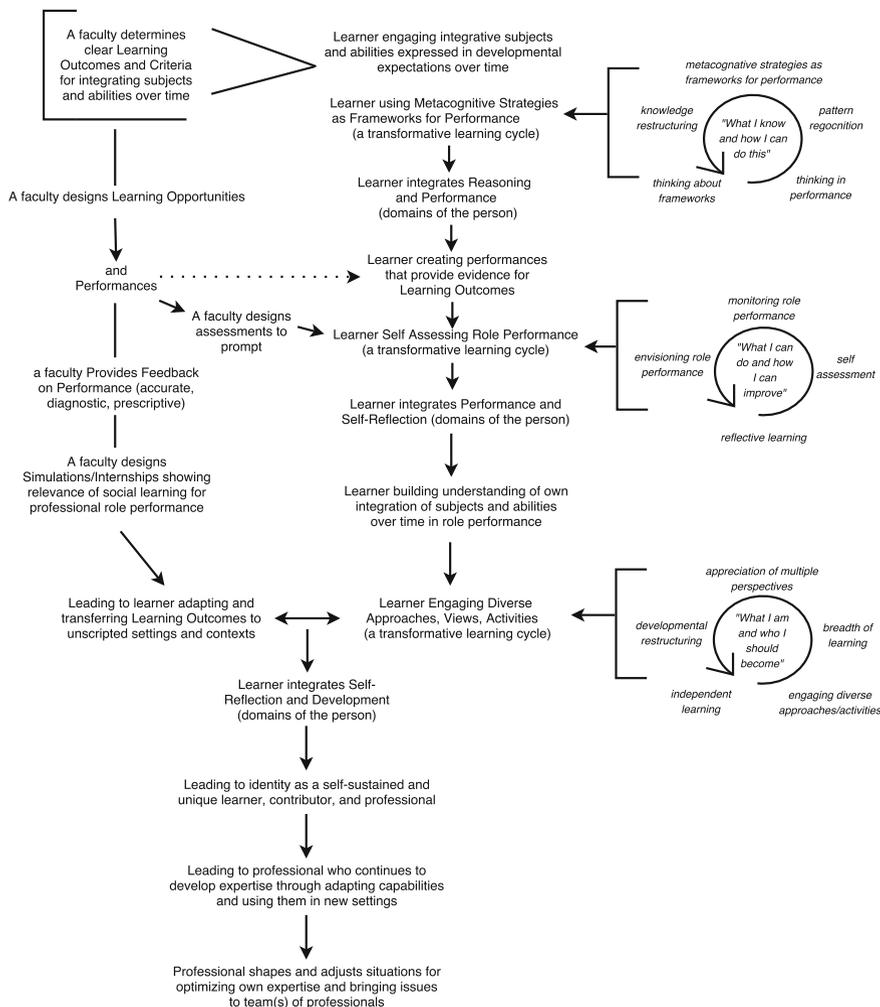
Fig. 2.1 Relationships Among Faculty Designs, Integrative Learning, Transfer of Learning, and Identity Development Prompted by Elements of Performance Assessment

2.6 Alverno Assessment Center for Student Learning and Development: How It Began

The Alverno faculty has had the support of an assessment center throughout their work with performance assessment. Indeed, Alverno College was the first of any organization to use the assessment center method for the purpose of *student learning and development.* The assessment center method was adapted to include elements of the process, but the faculty learned to use this process for educational

purposes such as: (a) Clear learning outcomes and criteria, (b) eliciting performance samples, (c) instructor and peer feedback on performance samples, (d) self assessment where the "self" is the *agent* rather than the *object* of assessment, (e) judgment of samples in relation to criteria by trained assessors, and (f) assessor and learner setting goals for further learning. In the case of a summative assessment, the goal of the assessor is to make judgments about strengths and areas to develop and discuss these with the learner, the role of the learner is to listen carefully to the feedback, and then the assessor and learner use the feedback in planning for further learning (Alverno College Faculty 1979/1994).

At that time, Dr. Douglas Bray at AT&T was using the assessment center method for *identification*, with *rejection* and *selection* of other business and management professionals, for their further training and advancement in the AT&T organization (Sister Joel Read, personal communication, March 15, 19, 26, 2013). William Byham and Douglas Bray cofounded *Development Dimensions International* in 1970. From 1969 to 1972, Alverno College had been generating its ability-based learning outcomes and its curriculum with its student assessment process for learning and development (Read and Sharkey 1985). In the academic year beginning fall 1972, an academic task force was charged by the faculty with "synthesizing faculty ideas into a blueprint for a curriculum" (Loacker et al. 2011). A group of four Alverno faculty members, Dr. Austin Doherty (Ph.D., Loyola University, Chicago, Psychology), Dr. Georgine Loacker (Ph.D., English Literature, University of Chicago); Jack Cooper (Masters in Music, Catholic University), and Dr. Brian Nedwek (Ph.D., University of Wisconsin, Milwaukee, Political Science), were invited by the faculty to research the learning outcomes that the corporate faculty had determined. In the process of her research, their assistant, Ms. Betsy Dalpes, found a description of an assessment center.

Sister Joel Read, Alverno's President, spent an entire day in 1971 calling each of the contacts that Ms. Dalpes had uncovered. Thus, she learned about the assessment center method at AT&T. In 1972–73, President Read and her faculty colleagues, Dr. Austin Doherty (professor of psychology) and Dr. Georgine Loacker (professor of English), traveled to New York's AT&T in lower Manhattan to find out more (Sister Joel Read, personal communication, March 15, 19, 26, 2013). They met with Joel Moses of AT&T. Moses suggested they visit Les Weinberger, an industrial psychologist and director of the AT&T Assessment Center in Milwaukee, Wisconsin. This they did, learning from Les Weinberger and later, Dr. Kelly Conrad, about this method used for *identifying*, *rejecting*, and *selecting* business and management professionals (Read, personal communication, March 15, 19, 26, 2013). Later, Weinberger and Kelly were loaned to Alverno through a community service agreement.

Loacker also traveled to the United States Military Academy (USMA) at West Point, NY to learn what the academy was doing related to identification, rejection, and selection of cadets. Loacker connected to USMA because Robert Greenleaf had traced the assessment center method, during an AT&T visit, to psychologist Henry Murray's successful assessments of performance for *identification, rejection,* and *selection* of effective professionals for spymaster service in World War II. In 1943,

Murray was a member of the Office of Special Services. In 1956, at AT&T, Robert Greenleaf had read, "A Good Man is Hard to Find", an article in *Fortune* on OSS assessment. Following, Greenleaf brought on Douglas Bray to design a new assessment for selecting managers, similar to OSS Assessment. Henry Murray was also involved in this new assessment design (Loacker et al. 2011).

Thus, Alverno's Assessment Center for Student Learning and Development, the first in any organization, was born and is ongoing. The curriculum was institutionalized in 1973, and in 1976, Alverno instituted its program and institutional assessment process and its longitudinal studies, with a grant from the National Institute of Education at the U.S. Department of Education.

However, all performance assessments used in the assessment center are *faculty designed*, as evidenced by the two assessments detailed below, in order that they can not only be used for learning and development of students, but also faculty learning and development, so that faculty members may engage in curriculum improvement. We now move to additional modes of inquiry that test the elements against faculty practices, namely faculty-designed performance assessments. Other measures, especially those used in longitudinal studies, were administered by the department of Educational Research and Evaluation.

2.7   Additional Modes of Inquiry

Two analyses of assessment designs from practice at Alverno College were used for selecting one summative *faculty-designed* performance assessment from each of the professions of nursing and business and management. Each appeared to exemplify each of the five elements. This chapter concludes with an example of a *profession-designed* assessment of student teaching practice that appeared to exemplify three of the five elements of effective performance assessment.

2.7.1   Alverno College School of Nursing Capstone Performance Assessment and the Alverno College School of Nursing Professional Portfolio

Assuring competence of students in professional nursing practice is critically important in a nursing education program. Using theoretical frameworks from the discipline of nursing and the expected learned abilities along with the principles and standards inherent in professional nursing practice (American Nurses Association 2001, 2003) the Alverno School of Nursing faculty developed a set of program outcomes that describe the required student performance. The *Alverno College School of Nursing Capstone Performance Assessment* and the *Alverno College School of Nursing Professional Portfolio* were subsequently faculty designed to reflect the program outcomes.

Effective strategies for evaluating outcomes include both faculty judgment of performance and student awareness of level of expertise. While assessments and subsequent feedback to students can be formative or summative, assessing whether students have met program outcomes requires a summative assessment that includes student self-reflection and self assessment of performance, using feedback in order to transform it. The capstone assessment in the nursing program is designed as a mock employment interview for a new graduate nursing position in a hospital setting. The interviewers are volunteer assessors from the nursing community who have been trained in administering the assessment, using the criteria to make judgments, and providing feedback to students so they can improve their performance. Assessors are given a list of questions to ask the student in the interview so that interviews are consistent across students.

2.7.2 Alverno College Professional Nursing Portfolio[1]

In preparation for the assessment, students are given the assessment criteria for review, provided a workshop on interviewing skills, and faculty members have assessed their *Alverno College School of Nursing Professional Portfolio* for nursing criteria related to program outcomes. They are expected to bring and use their portfolios in the interview, and volunteer assessors from the nursing community base their observations, judgments, and feedback on the portfolio as well.

Topic areas. Nursing students are also given the following topic areas as possible themes for interview questions (Table 2.1).

- Cultural diversity,
- Ethical dilemmas,
- Leadership/delegation/prioritization,
- Use of theory in nursing practice,
- Problem solving in difficult situations,
- Conflict resolution,
- Participation as a team member,
- Future goals,
- Personal qualities and assets and areas to develop,
- Patient advocacy, and
- Professionalism.

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[1]Section prepared by Margaret Rauschenberger, Professor of Nursing and Interim Dean, JoAnn McGrath School of Nursing, Alverno College, and Master of Science in Nursing (MSN), Registered Nurse, (RN), and Certified Correctional Health Professional (CCHP). She serves on the Curriculum Committee, Educational Policies Committee, and Problem Solving Department. Rauschenberger also maintains her practice as an advanced practice nurse in a jail setting. Rauschenberger email address: margaret.rauschenberger@alverno.edu.

Table 2.1 Elements for the performance assessment

Business and management program outcomes	Business and management external assessment outcomes
Uses discipline models and theories to analyze and communicate interdependence among systems, organizations, individuals and events	• Analyzes a business as a system of interdependent processes and makes strategic and operating decisions that optimize the system rather than its individual parts • Uses understanding of small business environment to assess the impact of a new business on the community and the socio/economic system • Effectively communicates business plan to meet the needs of a professional business audience
Applies business and management principles to develop and deliver quality products or services	• Conducts sound business research to evaluate a business idea • Integrates and applies principles and knowledge developed in previous courses, and designs a process to obtain relevant information to assess the feasibility of new product and service ideas
Uses team and organizational skills to work effectively with diverse individuals, teams and organizational units to meet stakeholder and organizational needs	• Integrates organizational and stakeholder perspectives to build a vision, objectives, and performance measures for a small business that reflects the needs of a variety of stakeholders • Balances personal and business goals with broader stakeholder needs to design a socially responsible business

Procedures. The assessment interview lasts about 20 min. The student then immediately completes a self assessment that highlights her mastery of the abilities and outcomes and asks her to do some self-reflection on her readiness for professional nursing practice. Once the student's self-reflection and self assessment is complete, the assessor provides some brief verbal feedback to the student. He or she then writes more extensive feedback that is provided to the student in an electronic format later the same day. Students who are unsuccessful on the performance assessment have some time for further preparation and allowed to reassess. The assessment is different because the assessor is not the same person.

Learning outcomes. This capstone assessment provides students with the opportunity to articulate accomplishments, using the language of the profession, to a member of that profession, and to demonstrate understanding of a need for continued growth and lifelong learning in nursing. A learning outcome is that the nursing candidate gains confidence in communicating her expertise to others.

Faculty learning outcomes. Faculty members study patterns in student performance over time from the professional nursing portfolio and the capstone performance assessment, as well as other student performance assessments. Each of these assessments is independently used to inform curriculum review and revision.

2.7.3   Alverno College School of Business Performance Assessment: Professional Interview and Business Plan[2]

The *Alverno College School of Business Performance Assessment: Professional Interview and Business Plan* is an externally administered performance assessment completed concurrently with the course, Small Business Management (MGT 400). It is administered by the Alverno College School of Business (AC 414). For the assessment, each student presents a business plan, which she/he has individually developed, to a local banker who assesses her professionalism, interpersonal communication, and general business knowledge. The interview is scheduled to follow the last session of the student's small business course. The candidate also completes a self-reflection and self assessment of her business plan, in addition to the results of the interview.

Synopsis of how students experience the assessment. This assessment is required for all undergraduate business majors in the Alverno College. Students complete an upper level, required small business course, and the *Alverno College School of Business Performance Assessment: Professional Interview and Business Plan* in their senior year. Midway through the small business course, the faculty coordinator for this performance assessment attends the small business class to describe the assessment, to create interest in and anticipation of the assessment, and to ask students to provide their bank location preference for their interview within the greater metropolitan Milwaukee and surrounding area. The School of Business makes every effort to match their location preference with a bank assessor in that geographic area, but does not promise to match the student with a specific banker or bank and does not permit the student to meet with a banker he or she already knows. At this point in the process, students realize that the interview will require them to stand alone and discuss their business plan and answer questions from the banker. This opportunity has tended to be a motivator for the student.

Purposes of the performance assessment. Purposes of the performance assessment are that faculty members receive an independent judgment from a trained assessor, a banker. Faculty members and also the banker, assess student integration and transfer of learning outcomes (integrated subject matter and learned abilities) for the business profession. During the semester, students have been actively engaged in independent research and development of a business plan for a new, small business venture. Thus, the purpose of the assessment is to provide students with an opportunity to demonstrate the advanced learning outcomes for their major field by using their analytic, problem solving, and social interaction abilities as integrated with the professional outcomes learned in the small business course, and to transfer them to an unfamiliar setting.

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[2]Section prepared by Dena Lieberman, former Dean of the Alverno College School of Business and Professor of Business and Management. Lieberman earned her PhD in Anthropology from the University of Wisconsin, Madison, and an MBA from Marquette University. Lieberman email address: dena.lieberman@alverno.edu.

Learning outcomes. Learning outcomes for business undergraduates include their ability to identify opportunities for developing new and quality products and services to meet the changing needs of organizations and individuals. This learning outcome requires learners to use advanced level analytic and problem solving abilities developed in the business major and specifically in the small business and management course, where they develop a small business plan. The professional business interview and business plan requires the student to integrate and transfer her knowledge and abilities from a course setting to a new and unfamiliar professional setting, by creating an appropriate stimulus to call forth her integrated and transferable knowledge and abilities related to developing new products and services.

Further procedures. Toward the end of the semester, the coordinator for the assessment returns to the class to give students their banker assignment, to provide them some tips on setting up the bank interview, and to prepare for the interview regarding their business plan. At this point, students are often feeling more prepared with their business plan, because it has been almost completed. They are often both nervous and excited about the upcoming experience. The faculty coordinator assures them that prior students have found this to be a positive and productive learning experience, a criterion for Alverno performance assessments.

The performance assessment process and product. The product, the business plan, provides the foundation for a professional interview with a small business banker. In the interview, students have an opportunity to establish a banking relationship with the banker and to request financing for their venture. The banker in turn raises questions he or she would ask a new business loan applicant. These include: assessing potential risks, credit worthiness, and confidence in the business entrepreneur to carry out the business plan. The banker provides expert feedback about the business plan, the business idea, and corroborates feedback with supporting evidence. The banker also provides feedback on the student's business sense and overall professional conduct.

Student self-reflection and self assessment. The learner completes a self-reflection and self assessment of her business plan and of the results of the interview. Students comment on what they learned from the bankers, what they did well, and specific areas they could change and improve. Some students have refined their business plans based on the banker's feedback and have implemented their plans. The School of Business has also invited some students to enter business plan competitions and these students have won recognitions.

Elements for the performance assessment. Elements are derived from the learning outcomes for the School of Business major. The student is judged on the following:

- Dimensions of content knowledge integrated with learned abilities,
- Business sense,
- Professional demeanor,
- Focus on the business concept and innovative thinking,
- Knowledge of the market and competition,

Table 2.2 Business and management program outcomes related to external assessment outcomes

1. **Self-reflection on learning own abilities**. A faculty-stimulated learning process of using self assessment to engage learners in observing their performance of abilities, rather than their person. Learners develop expertise in their learning process as a learning outcome
2. **Self assessing performance and using feedback to transform it over time**. A learning process of deepening ones learning by interpreting, analyzing, and judging ones performance, using instructor and peer feedback to improve performance, gradually transforming it over time with diverse feedback from trained assessors (faculty, peers, or professional and business community partners). This learning process leads to self-confidence and self-efficacy as learning outcomes
3. **Learners developing metacognitive performance**. A learning process of recognizing patterns in knowledge-rich environments, thinking while performing and thinking about disciplinary frameworks, this transformative learning cycle assists learners to engage in restructuring their knowledge. Thus, learners are adapting and transferring disciplinary frameworks integrated with learned abilities to unscripted, unfamiliar settings in relation to diverse criteria and standards. In this transformative learning cycle, learners are thinking metacognitively, using their learned abilities to prompt Metacognitive Strategies as Frameworks for Performance. Thus, they engage their capacity for integrating *Reasoning* and *Performance* that are domains of the person. A transformative learning cycle that leads to learning outcomes in the disciplines and professions, learners are stimulated by a demonstrated cause of growth, that is, breadth of learning in Alverno's ability-based curriculum
4. **Learners developing professional expertise**. A learning process of engaging in reflective learning, envisioning improved role performance, and then monitoring role performance in relation to criteria and standards across multiple, varied situations to reach beyond what they thought they could do. Learners combine this element with using feedback from diverse sources to improve their performance over time. Learners are gradually experiencing this learning process as a transformative learning cycle, namely, Self Assessing Role Performance. In this way, learners are also drawing on their capacity for integrating *Performance* and *Self-Reflection* as domains of growth, building toward an identity as a learner, contributor, and professional, an outcome of Alverno's ability-based curriculum
5. **Learners developing identity as a self-sustained and unique learner, contributor, and professional**. A learning process of engaging in learning independently, somewhat before they engage and accomplish a developmental restructuring of their thinking and reasoning. This restructuring is leading learners toward interdependent learning, appreciating multiple perspectives, and mutuality. This learning process continues toward further developing mutuality, key in understanding one's own uniqueness in relationships with others, as one continues learning professionally. This learning process is gradual and developmental, and it seems that faculty members are essentially stimulating students to make these connections in a transformative learning cycle, namely, Engaging Diverse Approaches, Views, and Activities. This cycle is stimulated by learners' breadth of learning in Alverno's ability-based curriculum as a cause of growth, assisting learners to integrate *Self-Reflection* and *Development*, domains of growth

- Cash flow and ability to service debt,
- Business sense in responding to unanticipated questions, and
- Professional demeanor during the interview (see Table 2.2 on next page).

Student feedback on the performance assessment. Based on their feedback after the interviews, almost every student says the experience gave them confidence. This was because they were able to discuss their business plan in a professional setting and to learn more about what a banker is expecting in a business plan.

Training for quality of the assessor role. To ensure that bankers are able to perform their role in the interview and performance assessment, School of Business faculty members provide the banker with training on the purpose of the performance assessment. Faculty members also provide training with a set of criteria and examples, so that the bankers can provide quality, written feedback for the student.

Refinement of performance assessment over time. Over the years, the business faculty at Alverno College has developed a cadre of bankers who serve as trained assessors for this performance assessment interview and business plan. The process of maintaining an active group of trained bankers as assessors requires significant faculty resources because our local bank industry has undergone contractions and bankers are mobile.

Creating time for bankers to conduct a performance assessment. Faculty members estimate that a banker spends about four hours assessing one student: (1) reading the plan, (2) meeting with the student, and (3) providing written feedback. As expected, some bankers are more willing than others to devote the time for training and assistance with the interview that is required for a performance assessment.

Learning outcomes for assessors. The bankers who stay with the performance assessment process and product often comment that they view their work as part of their community service. They often note that they enjoy the experience of assisting students to understand what bankers expect in interviews about business plans. Bankers typically comment that they are impressed with the quality and comprehensiveness of the student interview and business plans.

Use of faculty time and administrative resources. When faculty members created the performance assessment years ago, they did not necessarily anticipate the effort required to maintain an engaged small business bank assessor pool. This performance assessment also required administrative support for follow-up with bankers to ensure that faculty members received their electronic feedback, and for uploading the feedback to each student's diagnostic digital student portfolio.

Thus, Alverno College School of Business faculty has learned that a purposeful effort is required to maintain a group of active bank assessors. Faculty members who accept the assignment to coordinate this assessment make personal calls to bankers at their workplace, maintain phone and email contacts to cultivate these relationships, and recruit and train new bank assessors as needed. Currently, the School of Business has over 30 active bank assessors in the assessor pool.

Use of student feedback and faculty judgment to select assessors. Faculty members have also invited students to provide feedback on the quality of their assessors' performance and to recommend whether the faculty should continue to ask a banker to serve as an assessor. Thus, student feedback, combined with faculty member judgment, has assisted the School of Business faculty to invite or pass on

inviting a particular banker to assess. This strategy has assisted in maintaining a quality pool of trained assessors.

School of Business faculty perspective. The Alverno College School of Business faculty as a whole believes that the effort required for maintaining this performance assessment including a professional interview and business plan is worth continuing because the assessment challenges their students to integrate and transfer integrative knowledge and abilities learned in small business and management in order to demonstrate learning outcomes for the profession. Learning outcomes include: developing new and innovative products and services, researching business opportunities, analyzing relevant business information, and effectively interacting in professional business settings.

2.8 Alverno College School of Education Implementation of a Profession-Designed National Performance Assessment of Student Teaching

Three institutions have been participating in the profession-designed, nationally piloted, and field-tested implementation of the *edTPA* in Wisconsin (http://www.edtpa.com). The assessment proposes to create an inter-rater reliable and interstate instrument for establishing readiness for the profession of teaching by evaluating candidates teaching performance. The *edTPA* was jointly created by professionals at Stanford University, the Council of Chief State School Officers (CCSSO), and the American Association of Colleges of Teacher Education (AACTE). This performance assessment centers on candidates' self-reflection and documentation of a "learning segment" of linked learning experiences for their own students, and is completed during candidates' student teaching experiences.

Learning outcomes. The *edTPA* centers on the candidate's ability to (1) design meaningful plans for instruction, (2) engage students in instruction (measured in video recordings of lesson excerpts), (3) make sense of assessment and student learning data, and (4) reflect on what he or she has learned about the practice of teaching across the segment. While 80 % of the *edTPA* is identical across grade levels and content areas, 20 % of the assessment focuses on disciplinary and/or developmentally specific considerations (e.g., Performing Arts, Elementary Mathematics, Secondary English Language Arts, Special Education, and Early Childhood Education). The designers of the *edTPA* have selected Pearson to create and conduct the online evaluation system, but benchmarked and calibrated scorers will assess the candidates' work with professional teaching expertise in the content disciplines.

Purposes of the assessment. Alverno College School of Education chose the *edTPA* for implementation because (1) its conceptual terrain aligned with the faculty-designed performance assessment that candidates have consistently completed within the student teaching semester, namely *Teacher Effectiveness on*

Student Learning (TESL). This faculty-designed assessment has been validated internally (Rickards and Diez 1992) and externally (Zeichner 1997, 2000). The School of Education also advanced the implementation of the *edTPA* because (2) this performance assessment will be consequential for statewide, initial teacher licensure and continuous program review in September 2015.

Sample. Beginning in fall 2010, the entire student teaching cohort in general education, approximately 25–40 students per semester, completed the *edTPA* as part of their student teaching requirements. Starting in spring 2013, the entire student teaching cohort in special education also began completing the *edTPA*.

Wisconsin state policy. Wisconsin state policy requires 18 weeks of student teaching. Within those 18 weeks, student teacher candidates regularly complete two 9-week student teaching placements in each level of their licensure (e.g., developmental levels include kindergarten and elementary, middle, and high school). Alverno School of Education faculty members who supervise student teaching have implemented the *edTPA* during the first 9-week placement so that in cases where candidates may need to improve their performance, the improvements may be completed prior to Alverno's undergraduate commencement ceremony. (While student teacher placements follow a school's calendar, this event usually occurs three weeks prior to the completion of student teaching requirements.)

Alverno faculty used findings for improvement. Alverno School of Education faculty members have consistently used data for improvement (Diez 1988/1990; Merry et al. 2013). Thus, they used the *edTPA* data to evaluate program outcomes and make recommendations for curriculum revision. For example, supervisory faculty observed a weakness in candidates' asking of essential questions in elementary placements within middle childhood/early adolescent mathematics. Several candidates appeared to teach mathematics lessons less well than other candidates. Faculty members also noted that these candidates had not had an opportunity to teach a mathematics lesson prior to student teaching, because they had completed content areas outside of mathematics. Faculty addressed this issue by revising the course expectations in the field practicum immediately prior to student teaching, which now includes a "mini-*edTPA*", requiring candidates to document their teaching around their content certification areas over a 3-day period. School of Education faculty members have also used the *edTPA* data to examine other program outcomes, seeking to identify gaps and strengths among developmental levels and related content areas.

2.9   Validating the *edTPA*

Following completion of the *edTPA*, Alverno candidates reported that although the performance assessment was intensive, it accurately reflected their strengths as practitioners and required that they closely attend to their own students' or pupils' content learning outcomes. Candidates also reported that the depth and breadth of the commentaries for each *edTPA* component (e.g., Planning; Engaging Students

and Supporting Learning; Assessing; Reflecting) did prepare them for the professional interview process, a main focus of the *edTPA*.

Alignment with areas of hiring. This profession-designed national performance assessment *aligned* with areas of hiring concerns in local school districts. Concerns included: (1) differentiating instruction from assessment for individuals and subgroups; (2) identifying essential understandings in instruction; (3) engaging students actively in learning experiences; (4) closely interrogating assessment data; and (5) connecting theory and practice.

Adaptation by Wisconsin institutions and their reports. Three Wisconsin institutions at the state level adapted the profession-designed national performance assessment. This experience was the subject of a recent statewide conference for the University of Wisconsin System. Pointer Mace (2012, September) reported on Alverno's experience with the *edTPA*. Pointer Mace acknowledged that since she was leading the statewide effort, her own preparation in the nuances of the *edTPA* may have been a factor in Alverno's relatively less problematic adaptation. (Marvin Lynn of University of Wisconsin, Eau Claire and Cheryl Hanley-Maxwell of University of Wisconsin, Madison also reported on their schools' implementation of the *edTPA*.)

Report on Alverno faculty experience. Pointer Mace noted that Alverno Education faculty attributed their relative ease of adaptation of the *edTPA* to the smaller number of students at the College, compared with the University of Wisconsin, Eau Claire and the University of Wisconsin, Madison. However, Alverno faculty also commented that the institutional culture of performance assessment may have been a factor affecting their experience. Further, the Alverno School of Education requires that each candidate complete a video analysis of a teaching sample, beginning in the first field practicum and continuing through student teaching. Since video analysis is a part of the *edTPA* experience, Alverno candidates may have experienced easier completion of the *edTPA*. Candidates also have experienced rubrics for self assessment, another possible factor that may account for faculty experience and learner use in implementing the *edTPA*.

2.10 Analysis of *edTPA* for Elements of Performance Assessment[3]

Pointer Mace analyzed the *edTPA* for the five elements of performance assessment. She used both the experiences of the Alverno faculty and post hoc analyses from student comments. She found the following elements:

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[3]Section prepared by Desiree Pointer Mace, Associate Professor and Associate Dean, School of Education, Alverno College. She serves as a national design team member of the *edTPA*. Pointer Mace is also a member of the award-winning Valuing in Decision-Making Department. Pointer Mace earned her BA in Cognitive Science from Vassar College and PhD in Education from the University of California at Berkeley. Pointer Mace email address: desiree. Pointer-Mace@alverno.edu @dpointermace.

1. The first element, (1) *self-reflection,* was directly stimulated by the prompts embedded within the *edTPA* assessment handbooks. A candidate was required to analyze ones teaching in relation to the outcomes for student learning. As noted, candidates (1) design meaningful plans for instruction, (2) engage students in instruction (measured in video recordings of lesson excerpts), (3) make sense of assessment and student learning data, and (4) reflect on what he or she has learned about the practice of teaching across the segment.

2. The second element, (2) *self assessment*, occurred when candidates were invited to analyze their video samples of their teaching performances. For example, candidates completing the *edTPA* must identify points of connection (and lack thereof) regarding their own students' engagement within the video sample. Candidates must also analyze the effectiveness of their own performance assessment instruments, for capturing a continuum of their own students' understandings related to the content objectives. Candidates then created reasonable and warranted changes to their own learning segment design, as if they were to teach that particular content again.

3. The third element is (3) *learners developing professional expertise related to metacognitive performance.* Pointer Mace found that integrating Reasoning and Performance was evidenced in the *edTPA* performance data, not only through the content of the assessment but also by the process candidates used to create their documents. Candidates were able to create a timeline for completion of all required elements and hold one accountable. This is a critical professional capability for the work of classroom teaching.

   This finding was reinforced by a graduate of the program in a Major Forum on the *edTPA* conducted at the American Association of Colleges of Teacher Education (Whittaker et al. 2013). The graduate, Kathryn Miszewski, described the strong correlation between the performances evaluated by the *edTPA* assessment and the competencies critical to success in her first year of teaching, thus describing a relationship between the domains of her person, Reasoning and Performance. Thus, the *edTPA* more broadly addressed how the candidate conceptualized the role of the professional teacher, and how the candidate had developed metacognitive performance that connected the domains of her person, Reasoning and Performance.

4. The fourth element, (4) *learners developing professional expertise related to self assessing role performance,* was evidenced by the relationship of the *edTPA* components to the School of Education faculty-designed *Performance Assessment and Self assessment: Student Teaching Exit Portfolio.* This assessment encompasses the entire 18-week student teaching semester. It requires candidates to cumulatively self-reflect on and self assess their development as a teacher. The prompt for self assessment asks the candidate to articulate what she or he has learned as a teacher that is aligned with multiple disciplinary frameworks and abilities. The candidate is required to include the Wisconsin Standards for Educator Development and Licensure and (if a Special Education Candidate) the Council for Exceptional Children Standards. The student teacher is also required to use the Alverno Advanced Education Abilities as learning outcomes.

Pointer Mace's analysis demonstrated that one summative assessment, the *edTPA*, does not suffice for the fourth element, *developing professional expertise related to self assessing role performance*, nor should the *edTPA* be required to do so. The *edTPA* is also probably not valid for assessing the fifth element (5) *learners developing an identity as a self-sustained and unique learner, contributor and professional.* Both elements require continuous learning processes that are stimulated by faculty and cultivated across the entirety of the Alverno College Teacher Preparation Program and its performance assessments.

For example, at the end of the first undergraduate field practicum course, candidates engage in a performance assessment titled *I Have What It Takes.* This assessment requires them to closely read the dispositions of the Wisconsin Standards for Educator Development and Licensure, and provide evidence for their enactment, their performance, of selected dispositions. This orientation toward establishing that candidates successfully complete the assessment, *I Have What It Takes*, is not only elicited by but maintained throughout the program by faculty stimulation of students developing identity as a professional.

The *Alverno College School of Education Performance Assessment and Self Assessment: Student Teaching Exit Portfolio* stimulated candidates' *developing an identity as a self-sustained and unique learner, contributor, and professional.* Candidates provided evidence for their readiness to enter the profession with an identity as independent practitioners with high standards for their own learning as well as their own students' learning and development.

2.11   Scholarly Significance

Identifying effective elements of performance assessment based on conceptual frameworks in the external literature and Alverno literature, and derived from faculty practice, may lead to profession-designed and faculty-designed performance assessments that combine these elements (White et al. 2009). Professional identity formation may sustain effective performance over a lifetime of practice (Bebeau and Monson 2012; McKee and Eraut 2012).

So far, elements derived from a review of the external literature and Alverno literature included the following elements (see Table 2.2 for learning processes, transformative learning cycles, and learning outcomes). Faculty practice in performance assessment in the Schools of Nursing and Business and Management included the following five elements, and their attending learning processes. This is not a surprise, because they were designed to do so.

1. Self-reflection on learning own abilities.
2. Self assessing performance and using feedback to transform it over time.
3. Learners developing metacognitive performance.
4. Learners developing professional expertise.
5. Learners developing identity as a self-sustained and unique learner, contributor, and professional.

The profession-designed national performance assessment, *edTPA*, assessed the first three elements, according to faculty experience and candidate results. However, the School of Education had already created and validated a faculty-designed assessment. This final assessment for the student teaching experience, namely *Performance Assessment and Self Assessment: Student Teaching Exit Portfolio* captured element (4) *learners developing professional expertise*, with some support from the *edTPA*. Element (5) *learners developing identity as a self-sustained and unique learner, contributor, and professional,* is stimulated by additional performance assessments that learners complete throughout the School of Education professional program. These capture student development of both elements (4) and (5).

2.12   Conclusions

Faculty learning and student learning appear to occur for each of the five elements:

1. Self-reflection on learning own abilities.
2. Self assessing performance and using feedback to transform it over time.
3. Learners developing metacognitive performance.
4. Learners developing professional expertise.
5. Learners developing identity as a self-sustained and unique learner, contributor, and professional.

Learning processes occur for faculty and students with continuous performance assessment throughout their programs in nursing and business and management (see Table 2.3 and Fig. 2.1., Relationships Among Faculty Designs, Integrative Learning, Transfer of Learning, and Identity Development Prompted by Elements of Performance Assessment). These elements are made up of gradual learning processes and transformative learning cycles, and faculty members are stimulating students to make these connections so they develop learning outcomes. Faculty members appear to be learning from performance assessments (Mentkowski et al. 2012). Students and alumnae are learning from them, as evidenced by qualitative and statistical connections to the ability-based curriculum and its cultural context (Mentkowski et al. 2000; Rogers and Mentkowski 2004; Rogers et al. 2006).

Faculty-designed performance assessments illustrated all five elements, because they were designed to do so. The analysis of the *edTPA* found that each of the first three elements was experienced in Alverno faculty experience and by teacher candidates who commented on the assessment post hoc. However, faculty and candidates judged that element (4) was only related to the profession-designed national performance assessment when combined with the Alverno faculty-designed performance assessment, *Alverno College School of Education Performance Assessment and Self Assessment: Student Teaching Exit Portfolio*. Further, it appears that candidates had learned to use each of the five elements.

However, graduate professional schools should take note that Alverno learners were undergraduates and 5-year alumnae. Further, each professional school may

Table 2.3 Alverno College Bachelor of Science in Nursing Program Outcomes Related to Program Outcomes of the Alverno College School of Nursing Capstone Performance Assessment

BSN Program outcomes	BSN capstone assessment outcomes demonstrated by learner
Communicates creatively and effectively (Alverno ability: communication)	Communicates in multiple modes, using theories, strategies, and technology in professional practice
Integrates analytic frameworks within the practice of professional nursing (Alverno ability: analysis)	Identifies evidence of effective use of frameworks to address problems and meet the needs of clients
Applies problem solving processes to promote wellness in multiple environments (Alverno ability: problem solving)	Identifies evidence of her effective use of frameworks to address problems and meet the needs of clients
Uses valuing frameworks and ethical codes to promote human dignity (Alverno ability: valuing in decision-making)	Demonstrates the incorporation of values and ethics in decision-making
Interacts effectively in interpersonal, therapeutic, and group contexts (Alverno ability: social interaction)	Competently communicates the effect of individual qualities, qualifications, and environment on the success of therapeutic relationships
Advocates for and improves access to health care (Alverno ability: effective citizenship)	Identifies evidence of effective use of frameworks to address problems and meet the needs of clients
Fulfills the responsibilities of a professional practitioner in contemporary society (Alverno ability: developing a global perspective)	Consistently demonstrates characteristics of a professional nurse
Appreciates the uniqueness of self and others to promote wellness (Alverno ability: aesthetic engagement)	Demonstrates the incorporation of values and ethics in decision-making

choose to conduct their own analyses of faculty-designed and profession-designed performance assessments. The authors' have found that elements for performance assessment that rely on faculty and student learning are so broad as to be somewhat useful, which makes them more likely to be used. However, these elements may be *adapted* for use, because another curriculum, including Alverno's, *cannot be adopted*. We might all agree that the needs of a faculty and its student body are too unique but that rather, we might adapt from the external literature those ideas that prompt student learning that we may use with each institution's own students (Mentkowski 2006). It may be tempting to overgeneralize from the Alverno student and alumna learning outcomes because Alverno faculty and students learned from the ability-based curriculum and its performance assessments. Rather, we have set forth several elements for faculty and student learning that we believe are warranted by literature external to the College, Alverno literature, and our research findings.

> **Issue/Questions for Reflection**
>
> - As authors, we suggest that faculty teams might review a *profession-designed* or *faculty-designed* performance assessment for the elements set forth in this chapter
> - Do our performance assessments include each of these elements? Are there some elements that we include that these authors do not?
> - What learning processes do we stimulate for our learners with our performance assessments?
> - Are there transformative learning cycles that we stimulate for our learners that these authors did not identify in the experiences of the Alverno faculty and their research findings? What are these, and how might we describe them for our students and ourselves?

Notes

Note 1. Institutional Review Board review is not applicable, because performance assessment is a component of the Alverno College program in each analysis of practice for nursing and business and management.

Note 2. Pointer Mace submitted the appropriate documentation to the Alverno Institutional Review Board for the *edTPA* study, and was approved by the Board.   *Note 3*. Alverno students and alumnae contributed to a longitudinal study data collection from 1976–1990. These learning processes, transformative learning cycles, and learning outcomes are evidenced by qualitative and statistical connections to the ability-based curriculum and its cultural context (Alverno College Faculty 2000). Quantitative and qualitative data analyses were reported in Mentkowski et al. (2000). See Fig. 4.2. Alverno Curriculum as a Cause of Student Growth During College, pp. 128–129 and Fig. 4.3., Alverno Curriculum as a Cause of Sustained Learning and Growth After College, pp. 136–137. See also Appendix H: Developing Perspectives of Students on Self assessment, Using Feedback, Commitment to Improvement, and Role of Criteria, pp. 447–554. See also Appendix J: Five-Year Alumna Perspectives on Learning Outcomes and Causal Attributions to Alverno Curriculum and College Culture, pp. 455–457. Rogers and Mentkowski (2004) and Rogers et al. (2006) also confirmed these analyses and extended them.

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