Perceived Benefits of the Use of Learning Contracts to Guide Clinical Education in Respiratory Care Students

Kathy Jones-Boggs Rye EdD RRT

BACKGROUND: The benefits of contract learning have been identified in the literature as increased individualization to meet the student's individual needs, promotion of learner independence, and development of lifelong learning behaviors among students. METHODS: I used an "action research" approach to implement the contract-learning method into a clinical course. Clinical learning contracts were designed to provide students with the opportunity to focus on any identified areas of unsatisfactory or desired practice. The learning contract specified how the learner would acquire the knowledge and attitudes relevant to their selected learning experience. The learning contract was used as a learning tool and as evidence of the student's development in the clinical experience. Twenty-four senior respiratory therapy students in the College of Health Related Professions, University of Arkansas for Medical Sciences, prepared and used learning contracts during their Clinical Practicum IV. After they had completed the clinical practicum and received their grades, I surveyed the students about their experience with the learning-contract method. The surveys were administered anonymously. RESULTS: Twenty-one students (88%) returned the surveys. The respondents were overall quite optimistic regarding learning contracts. They generally agreed that they could use the learning contract with confidence and that there is an increase in student autonomy and motivation in scholarship with a learning contract. The median agree/disagree ratings on the survey ranged from 1 (strongly agree) to 2 (agree). CONCLUSIONS: Contract learning is favorable to students' knowledge and skill acquisition and can be incorporated into clinical education of respiratory care students. *Key words: students, respiratory therapy education, respiratory care education, contract learning, clinical education, learning strategies, motivation, autonomy.* [Respir Care 2008;53(11):1475–1481. © 2008 Daedalus Enterprises]

Introduction

For decades, educators have tried a number of approaches for transitioning the learning process toward self-direction. As a result of these efforts, a process known as collaborative learning has evolved and is becoming more and more popular across the country.[1] Collaborative learning seeks to match educational activities with the needs of individual learners. Contract learning fosters a collaborative learning environment.[1] The spotlight shifts from the transmission of knowledge to the generation of knowledge in the collaborative approach.[2] Thus, students can be evaluated on the development of individualized learning activities and attention is focused on the individual learner.

Most advocates of the learning-contract method identify the benefits as individualization of the learning process, promotion of learner independence, development of lifelong learning behaviors in students,[3] and active participa-

Kathy Jones-Boggs Rye EdD RRT is affiliated with the Department of Respiratory and Surgical Technologies, College of Health Related Professions, University of Arkansas for Medical Sciences, Little Rock, Arkansas.

The author reports no conflicts of interest related to the content of this paper.

Ms Rye presented a version of this paper at the OPEN FORUM at the 53rd International Respiratory Congress of the American Association for Respiratory Care, held December 1-4, 2007, in Orlando, Florida.

Correspondence: Kathy Jones-Boggs Rye EdD RRT, Department of Respiratory and Surgical Technologies, College of Health Related Professions, University of Arkansas for Medical Sciences, 4301 W Markham Street, Slot 704 (14B/NLR), Little Rock AR 72205-7199. E-mail: ryekathyj@uams.edu.

tion by learners. Bouchard and Steel described the preparation of nursing students for ongoing learning as:

> …a major responsibility of the educational system in our rapidly changing world. Given the short half-life of professional knowledge in the health field, it seems imperative that health care educators no longer strive to provide a finite package of knowledge. Opportunities to be self-directed within the security of the academic milieu should facilitate the development of skills needed to assume responsibility for change.[4]

Undergraduate courses in health care that are not designed to foster active involvement in learning and that do not encourage students to take responsibility for their own learning independent of their instructor(s) may be lacking in the preparation of future health professionals.[5]

In an attempt to guide the learning process toward self-direction in the clinical learning environment and to assist respiratory care students in developing lifelong learning behaviors, I implemented the use of learning contracts in my respiratory care program. The literature has focused on the definition and characteristics of learning contracts and attempted to build an argument that learning contracts increase student motivation for learning and foster the skills of self-directed learning. Therefore, I thought it was crucial to explore students' viewpoints on the benefits of learning contracts. This paper reports on the use of learning contracts in respiratory care clinical education at the University of Arkansas for Medical Sciences, and describes the implementation and evaluation of learning contracts in a clinical context for a group of senior respiratory care students. My aim was to evaluate the students' perceived benefits of learning contracts in their clinical education.

Methods

I used an "action research" approach (http://en.wikipedia.org/wiki/action_research). The respiratory care program faculty participated in developing the course objectives, teaching strategies, planning and coordination of clinical placement, and development of the learning contracts. The action research approach allowed faculty to be active respondents in the experience by preparing and facilitating the students.

The study population consisted of 24 senior students in the baccalaureate respiratory care program. The institutional review board of the University of Arkansas for Medical Sciences approved the project. The action research cycle consisted of 3 phases.

1. Planning and Contract Making

Students complete 200 contact hours of clinical experience during the Clinical Practicum IV, in the subject areas they choose. Some students choose an area in which they plan to seek employment, and others choose areas in which feel they need more experience. The clinical rotation was planned to include experience related to the curriculum in the previous 18 months in the program. The planned placement offered clinical experiences in the general or critical care of adult, neonatal, or pediatric patients, and in alternate settings, such as transport, the emergency department, or home care. Students were supervised and assessed by respiratory therapist preceptors in their clinical rotations. The learning objectives for the clinical practicum covered the essential outcomes in broad terms. Examples of the learning objectives:

- Manage a minimum daily work load of 3 to 4 critically ill, ventilated patients, independently or with minimal supervision from my preceptor.
- Demonstrate the knowledge, clinical skills, and attitudes required of a registry-eligible respiratory therapist in the adult, neonatal, or pediatric critical care unit.
- Demonstrate proficiency with the high-frequency oscillator.
- Demonstrate skills in establishing relationships with the patient, the patient's family, and other clinicians.
- Plan, implement, and evaluate care for clients with various respiratory problems.
- Function as a member of the multidisciplinary health care team.
- Synthesize and evaluate clinical learning experiences.

In the clinical practicum, we provide flexibility for the students to develop learning objectives that are specific to their own perceived learning needs. A briefing session was conducted at the beginning of the semester to introduce students to the learning-contract method and inform them of this study. The students received instructions for how to formulate a learning contract and sample contracts for reference. The students were required to establish their learning objectives and discuss their learning contracts with their faculty advisors at least one month before the rotation began. Prior to the meeting with the faculty advisor, students were asked to identify individual learning objectives, based on their self-identified learning needs, and then to propose the learning strategies and resources that would be needed. The primary guiding question for the meeting with the faculty advisor was, "What are your personal goals and how can they best be met in a partnership with your preceptor and myself?" Next, students were asked to identify

strategies that would provide evidence of their accomplishment and the means for evaluating their overall performance in the clinical course.

The learning objectives were negotiated and agreed upon between students and their faculty advisors. During negotiation the instructor might add additional criteria that he or she thought were essential to a fair and equitable assessment of the rotation the student proposed. The student was allowed to respond to the instructor with thoughts and suggestions, and the student and advisor continued to negotiate the contract until both were satisfied with the final product. The learning contract was finalized during the first week of the clinical rotation, and the preceptor's signature on the contract indicated his or her agreement with the contract. The appendix shows an example of a learning contract.

2. Implementing the Learning Contracts

With the assistance of the clinical preceptors, the students executed the learning contracts during the routine activities in their clinical areas and special procedures or specially arranged clinical situations. Clinical preceptors discussed the learning progress of students regularly and completed Internet-based affective student evaluations weekly at an online biomedical education database service provider (DataArc, http://www.dataarc.ws). At the midpoint and at the end of the rotation, the clinical preceptors assessed the students according to the criteria stated in each student's individual learning contract.

3. Evaluating the Effectiveness of Contract Learning

After the students finished the clinical rotation and received their grades, I surveyed the students for their opinions on the effectiveness of contract learning, with a survey entitled "Perceived Benefits of Contract Learning." The survey consisted of 25 items and was modeled after a questionnaire developed by Cheng.[6] The survey was intended to explore the students' perceptions of their own abilities to use a learning contract, the availability of resources, and the effects of learning contracts on student autonomy, motivation, and applying theory to practice. Students were asked to rate each survey statement from 1 to 5, as follows: 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree. I used descriptive statistics to analyze the data and calculated the median and range for each item.

Results

Twenty-one (88%) of the 24 students enrolled in the clinical courses returned the survey. The students' age range was 22–44 y (mean 26.4 y). Eighty-six percent of the respondents were female and 74% were white. The internal consistency of the sub-scales ranged from 0.74 to 0.087.[6] Table 1 presents the median and range ratings. The median ranged from 1 to 2, which indicates that the respondents strongly agreed or agreed.

The respondents were overall quite optimistic regarding learning contracts. They generally agreed that they could use learning contracts with confidence. Two respondents (10%) did not find the learning contract easy to construct or implement. One of those students felt that it was difficult to identify the appropriate objectives, resources, evidence of accomplishment, and assessment criteria. The same student was also the only student who had negative views with regard to the resources provided for the internship by the university, the clinical affiliate, the faculty advisor, and the preceptor. One other respondent felt that the faculty advisor was less than supportive of the process. All other respondents (90%) felt that the resources provided were appropriate.

Ninety-five percent of the respondents agreed that the internship based on the learning contract facilitated their ability to apply their knowledge to practice. All the respondents agreed that the internship based on the learning contract improved their clinical skills. In addition, 90% agreed that the clinical course based on the learning-contract method could help enhance their autonomy and motivation for acquiring the needed knowledge, skills, and clinical attitudes.

Discussion

Learning contracts have been advocated as a solution to problems plaguing educators more often than all other teaching strategies and methods combined.[7] Berger et al described the learning contract as "a formal agreement written by a learner, which details what will be learned, how the learning will be accomplished, the period of time involved, and the specific evaluation criteria to be used in judging the completion of learning."[8] Most definitions of the term "learning contract" include features of preference for the learner's choice of activity, learning objectives or learning plans, and usually a concurrence between the learner and mentor, preceptor, or coach. The learning contract consists of 5 basic components: learning objectives, learning resources and strategies, evidence of accomplishment of the objectives, criteria and means for validating evidence, and time line for completing the objectives.[9-11]

For a learning contract to be effective it must "incorporate additional features: they are formal, written agreements, and they set out clearly what will be learned, how the learning will be achieved, and how it will be evaluated."[12] The learning contract should also establish the level of support to be provided by the mentor or coach, provide ample opportunities for independent learning, and make

Table 1. Survey: Perceived Benefits of Contract Learning*

Survey Item	Median	Range
The learning contract was easy to construct.	1	1–5
It was easy to identify the appropriate objectives, resources, evidence of accomplishment, and assessment criteria.	1	1–4
I was able to implement what I had planned in the learning contract for my internship.	1	1–5
It was easy to get access to the relevant learning resources.	1	1–4
The instruction on using learning contracts was adequate.	1	1–3
My clinical preceptor was supportive of this process.	1	1–4
My faculty advisor was supportive of this process.	1	1–4
There were sufficient resources provided by the university.	1	1–4
There were sufficient resources provided by the clinical affiliate.	1	1–4
I can learn deeply and permanently from the learning contract/internship.	1	1–3
My internship based on the learning contract helped me relate knowledge to practice.	1	1–4
My internship based on the learning contract helped me apply knowledge to practice.	1	1–4
My internship based on the learning contract helped me improve my clinical skills.	1	1–3
The internship based on a learning contract has given me more confidence in my own capabilities.	1	1–4
The learning contract increases my responsibility in the internship.	1	1–4
The use of learning contracts makes learning more self-directed.	1	1–4
The use of a learning contract increases my control in learning.	1	1–4
The learning contract increases my autonomy in learning.	1	1–4
The learning contract increases my motivation to learn.	2	1–4
I enjoy this kind of learning method in the clinical setting.	1	1–4
The internship based on the learning contract meets my clinical learning needs.	1	1–4
I prefer clinical learning in this way rather than the conventional clinical rotation.	2	1–3
The learning contract increases my interest in the internship.	1	1–4

* Rated on a 1–5 scale: 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree..

available a wide selection of resources to sustain the learning experience.[12-16]

A written agreement or "contract" implies that the learning activities to be accomplished are important, legitimate, and fair to all parties concerned.[11,17] Though the learning contract is not a legally binding document, the use of the word "contract" alludes to the importance of the commitment all parties are making to work toward the goals stated in the agreement.[12]

The implications for the application of learning contracts to clinical education are abundant. Contract learning has been successful in various health care professions, including medical schools,[5,18,19] nursing,[3,20,21] and radiology technology,[22] and in undergraduate, graduate, in-service, and continuing education.

Renner et al compared baccalaureate-degree radiology-technology graduates who used learning contracts to graduates of 2 other baccalaureate programs that did not use learning contracts.[22] They reported that contract learning contributed to greater job satisfaction, more participation in professional continuing education, more involvement in professional organizations, and more participation in self-directed learning. The present study did not address those potential benefits of contract learning, so more research is needed.

Richardson's 1987 study investigated contract learning in a senior nursing practicum. After the practicum the students expressed "heightened confidence in their ability to be more self-directed and independent in clinical practice."[3] The respondents in the present study also reported increased confidence and competence.

Way[23] described the use of contract learning for assessing clinical competence in nursing education. Student nurses used reflective analysis to identify that learning had occurred and how it might influence their future practice. Learners were also allowed to demonstrate their abilities by having a mentor witness the event and validate the level of competence. In the present study, RT preceptors wit-

nessed and validated student competency. One student shared, "I now also realize how well prepared I am for the career that I have chosen." Several other respondents reflected on how much they found that they still need to learn and will be required to learn as they progress in their careers.

Despite the positive aspects of contract learning, Tsang, et al[24] identified a couple of major problems in the implementation of learning contracts, in an occupational therapy program in Hong Kong. Some of their learners found it very difficult to write the learning contract, and many of the learners wrote contracts that were very similar in content and format. Also, some students wrote less demanding learning objectives than did others, to ensure that they earned passing grades. According to Tsang et al, "negative results can be explained in terms of cultural differences between Western and Asian students' perception of the teachers."[24] Tsang et al concluded that with adequate training of mentors or preceptors and appropriate counseling and coaching of learners, facilitating self-directed learning by contract learning was an overall positive experience for all stakeholders. In the present study, the faculty found that the students tended to write contracts similar in content and format. However, I did not find that the students wrote less demanding objectives to ensure that they received better grades. Furthermore, I found it beneficial to meet with students to provide guidance and encouragement during contract construction.

Caffarella[25] suggests that contract learning is an ideal strategy to deal with wide differences among individual learners. Accordingly, I have found contract learning useful in meeting the diverse needs of students. Furthermore, contract learning increases student motivation for learning and facilitates the development of mutual trust and respect between the educator and the learner while providing a more individualized approach to instruction and fostering self-direction in learning. I firmly believe that allowing students to write learning contracts in which they are able to select their preferred clinical sites and preceptors also contributes to motivation. Bush's study confirmed that college students' perceptions of autonomy support from their teacher or preceptor positively influence student motivation.[26]

Wilson and Grambrell[27] maintain that learning efficiency and the willingness to learn are enhanced if what is to be learned and the methods for learning it have been agreed upon by the learner and the educator. The present study found that the faculty and students were able to work together to develop more meaningful internships. Learners who have some flexibility in the selection of learning activities will take more responsibility for their own learning. If the desired outcome is lifelong learning, students must be motivated to develop strategies on how and where to find answers to problems, and to identify specific learning resources.[28] Knowles proposed that when students engage in self-directed (contract) learning, they "learn more deeply and more permanently than through other methods."[11]

In my department, contract learning was implemented into the curriculum to promote self-directed learning and lifelong learning behaviors. Students were provided traditional clinical experiences in Clinical Practicums I, II, and III. Clinical Practicum IV (in the final semester of the program) required use of a learning contract to guide the clinical experience. The overall expectation was that the student would demonstrate registry-level competency by the summation of Clinical Practicum IV. Competency was further tested with the National Board for Respiratory Care Written Registry and Clinical Simulation examinations. All students are required to pass these examinations to graduate.

Because of the research design and the sample of senior respiratory care students from only one southern academic health science center, the conclusions drawn from the findings of this research are generalizable only to those students who participated in this study. This study was an exploration into the perceived benefits in a selected group of learners and it is not intended as a verification of fact.

The students' mean age of 26.4 y and the fact that the majority of respondents were white and female could be seen as confounding variables for motivation. However, Grimes[29] found in the community college environment that women and non-traditional students had higher motivation/self-discipline scores. Furthermore, in that study ethnic differences did reveal lower placement scores among African American students, but the attrition rate of African American students was no higher than other students. Grimes found no differences in motivation according to ethnicity.[29]

In my study of persistence of 4-year allied health students, I found that Hispanic students were 21.4% less likely to persist than white students. However, there was no significant difference in the persistence of white and black students, and neither age nor gender was significantly correlated to persistence.[30]

Concern about intimidation can arise when students and educators have an established relationship over a course of study in a professional program. Students may feel compelled to say only good things about their learning experiences or to participate in research even though they really do not wish to.[31] To neutralize those concerns and eliminate the "halo effect," students were assured that their participation was entirely voluntary and that they could withdraw at any point without any questions. The surveys were not administered until the clinical courses were completed and grades had been assigned. Students were reassured that all information reported would be confidential and that anonymity would be strictly preserved. No iden-

tifying information was declared on the survey instrument. All students participated in the study voluntarily and had the right to refuse participation in the survey.

Conclusions

The present study suggests several important observations about the use of learning contracts to guide respiratory care clinical education. The findings indicate positive attitudes regarding the development of students' clinical confidence and competency and that the students were able to self-identify additional learning needs as they acclimated to the respiratory care culture. The students' positive attitudes regarding their learning experiences validated that learning contracts can guide the learning process toward self-direction and assist students in developing lifelong learning behaviors.

I believe that developing a learning contract designed to facilitate these processes allows the learner to monitor his or her own education, to become a more discriminating user of education resources, and to focus on acquiring the desired clinical experiences.

The clinical learning contract was originally developed for guiding learning experiences of students during clinical internships. Subsequently, learning contracts became a valuable tool for ascertaining clinical competency. The clinical learning contract has evolved into both an evaluation tool and evidence of students' competency development.

As a result of the present findings, I believe that integrating clinical contracts into the curriculum to guide clinical learning experiences was beneficial for my department's students. Through this qualitative study, they painted a portrait of their personal and professional development. I believe the experience will assist them as they embark on their careers as respiratory therapists and lead them to more a fulfilling professional life. Further research will be necessary to determine if learning contracts provide the additional benefits reported by Renner et al: more job satisfaction, participation in professional continuing education, and involvement in professional organizations.[22]

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Appendix

Sample Learning Contract

Upon completion of eighteen 12-hour days under the direction of _____, I will:

- Demonstrate the knowledge, clinical skills and attitudes required of a Registry-Level Therapist in the critical care environment. My success in meeting this objective will be documented by my preceptor's evaluation of me on the Respiratory Therapist Competency Inventory and by my own assessment of my performance, as described in my journal. The minimum acceptable standard on the Respiratory Therapist Competency Inventory is that two thirds of the items are rated at "Frequently" or Almost Always." This objective is worth 2 points.

- Manage a minimum daily workload of 3 to 4 critically ill, ventilated patients independently or with minimal supervision from my preceptor. This includes but is not limited to interpreting arterial blood gas values, chest radiographs, ventilator settings, laboratory findings, pharmacology, and medical history. My success in meeting this objective will be measured by a preceptor rating of at least a "B" on the final Clinical Internship Evaluation Form and by my own assessment of my performance, as described in my journal. This objective is worth 2 points.

- Increase physician contact hours to further understand the patients' disease processes, diagnoses, and treatment regimens. This will be done by attending rounds a minimum of once a week. My success in meeting this objective will be documented by my preceptor's weekly evaluation and by my own assessment of my performance, as described in my journal. This objective is worth 2 points.

- Gain experience in the critical care environment, including patient and family interaction and developing professional rapport with my preceptor and other healthcare providers. My success in meeting this objective will be documented by my preceptor's weekly evaluation and by my own assessment of my performance, as described in my journal. This objective is worth two (2) points.

- Demonstrate competency performing ventilator set-up, ventilator circuit changes, and spontaneous parameters. My success in meeting this objective will be verified by program faculty assessment of my performance (which will be documented in the DataArc database), my preceptor's evaluation, and by my own assessment of my performance, as described in my journal. This objective is worth 2 points.

Student Signature: _____

By signing, I state I will assist the student in attaining the above stated objectives.

Advisor: _____

Preceptor: _____