Leadership curriculum in undergraduate medical education: A study of student and faculty perspectives

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Abstract

Background: Leaders in medicine have called for transformative changes in healthcare to address systems challenges and improve the health of the public. The purpose of this study was to elicit the perspectives of students, faculty physicians and administrators regarding the knowledge and competencies necessary in an undergraduate leadership curriculum.

Methods: A mixed-methods study was conducted using focus group discussions and semi-structured interviews with faculty physicians and administrative leaders, as well as a written survey of medical student leaders.

Results: Twenty-two faculties participated in focus groups and interviews; 21 medical students responded to the written survey. Participants identified emotional intelligence, confidence, humility and creativity as necessary qualities of leaders; and teamwork, communication, management and quality improvement as necessary knowledge and skills. Students perceived themselves as somewhat or fully competent in communication (90%), conflict resolution (70%) and time management (65%), but reported minimal or no knowledge or competence in coding and billing (100%), writing proposals (90%), managed care (85%) and investment principles (85%). Both faculty and students believed that experiential training was the most effective for teaching leadership skills.

Conclusions: Study participants identified the necessary qualities, knowledge and skills to serve as goals for an undergraduate leadership curriculum. Future studies should address optimal methods of teaching and assessing leadership skills among medical students.

Introduction

The milieu in which today’s graduates will be practicing medicine, is changing rapidly. Physician autonomy has been replaced to some extent by interdisciplinary and inter-professional care, demanding better teamwork and communication (Gawande 2001). The Institute of Medicine recommends that academic health centres “develop leaders at all levels who can manage the organizational and systems changes necessary to improve health through innovation in health professions education, patient care, and research” (Recommendation 7a) (IOM 2004). Despite these recommendations, few medical schools have leadership curricula in place (O’Connell & Pascoe 2004). Although faculty and students recognize the importance of leadership training (Martins et al. 2005), the specific knowledge, skills and attitudes that should be the goals of leadership curricula, specifically for undergraduate medical education (UME), have not been defined. The purpose of this study was to determine the qualities, knowledge and skills that should serve as the goals and objectives for leadership training in UME, and identify the learning experiences appropriate for achieving these goals and objectives.

Practice points

- Preparing future physician leaders requires life long learning.
- Undergraduate medical education provides an ideal setting to lay the foundation for these leadership competencies.
- Emotional intelligence, confidence, humility and creativity are key qualities of successful leaders.
- Teamwork, communication, management, and quality improvement are important knowledge and skills to taught in an undergraduate leadership curriculum.
- Further research is necessary to study the optimal teaching and assessment methods for a undergraduate curriculum on leadership.

There is substantial literature on leadership development in graduate medical education (Doughty et al. 1991; Pearson et al. 1994; Wipf et al. 1995; Sims & Darcy 1997; Kasuya & Nip 2001; Awad et al. 2004; Iruni et al. 2004; Stoller et al. 2004) and continuing professional development (Maudsley et al. 1994; Skochelak et al. 2001; Kochar et al. 2003; Lison et al. 2003).

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Hill & Stephens 2005), however, we found few studies that address leadership development in UME. O’Connell and Pascoe describe a leadership curriculum implemented in eight medical schools that participated in the UME-21 project (O’Connell & Pascoe 2004). The majority of schools did not have explicit leadership curricula but used clinical care teams to demonstrate the principles of leadership; only three of the schools had an explicit curriculum on leadership. Martins et al. conducted an exploratory study of perspectives about management education by conducting structured interviews with British and Portuguese medical students, a hospital manager and a clinical director (Martins et al. 2005). In this study, participants viewed management education as important in UME, and identified desired topics to include managing people, the National Health Service, the leadership role of doctors and cost and resource management. However, the applicability of the findings of this study to UME in the United States may be limited because of the differences in health systems. Furthermore, this study was related more to management education and not leadership education per se. McKenna et al. conducted surveys of 110 physician leaders, educators and medical students to elicit their perceptions about physician leadership competencies (McKenna et al. 2004). Their surveys were comprised solely of structured questions; hence, it is likely that the richness of respondents’ perceptions may not have been completely captured in this study.

Mayo Medical School is currently in the process of curriculum reform. A recently revised mission statement, which provides the framework for the reform process, focuses on the education of physicians to serve society by assuming leadership roles in medical practice, education and research. At the time of this study, there was no comprehensive curriculum on leadership. This study was undertaken to assist with the development of a leadership curriculum consistent with the new medical school mission statement.

Our study used a combination of qualitative and quantitative methods to capture the richness of perspectives about leadership available from healthcare leaders, physician educators, and medical student leaders. Our conceptual framework include the assumptions that leadership can be developed and taught; and that an ideal style of leadership is that of transformational leadership where a physician as a functional leader of the healthcare team creates the vision and guides change through inspiration and the commitment of his team (Judge & Bono 2000).

Methods

The Mayo Clinic Institutional Review Board exempted this study from ethics review. Data was collected using focus groups, semi-structured individual interviews and email surveys. The choice of methodology for data collection was based on participant availability for meetings and other logistics. Participants were chosen by purposeful sampling (Miles & Huberman 1994) of individuals thought by the Medical School Deans to be the most articulate and knowledgeable about leadership. Data was captured through notes in both the focus groups and semi-formal interviews. The analysis of the qualitative data in this mixed methods study was conducted using the constant comparative method (Strauss & Corbin 1990).

Focus groups

Institutional leaders selected by purposeful sampling were invited to participate in focus groups to help develop an undergraduate leadership curriculum. Each of the focus groups lasted 90 minutes. The first focus group was comprised of two medical school deans, two institutional chief executive officers, three administrators and two nursing leaders. The second focus group was comprised of nine physician educators including seven physicians and two residency directors, all with leadership roles in curriculum development and teaching in the medical school. Prior to the start of the discussions, an overview of the curriculum reform process and need to design a new leadership curriculum for medical students was given to the participants. Following this overview, two questions were used to stimulate discussion during the focus group interviews: “What knowledge, skills, and behaviours are necessary for successful physician leaders?” and “What are your perspectives about leadership training for medical students?” The facilitator assisted with clarifications and focusing the discussions in relation to these questions.

Semi-structured interviews

Semi-structured individual interviews were conducted with the Foundation Chief Executive Officer and three administrative leaders from the sections of marketing, human resources, and health systems administration in the institution. The questions used to steer the interviews were similar to those used in the focus group discussions.

Surveys

Mayo Medical School has 42 students in each class year. A purposeful sampling of 31 elected student leaders, including class representatives, curriculum committee members and student organization executive members were invited to participate in an on-line survey as part of this study. We felt that student leaders, especially those who are articulate might be in the best position to answer the surveys. The on-line survey was chosen as the method for data collection because several students were in elective rotations outside the state. The three-part online survey tool was developed to obtain the perspectives of student leaders. This survey was based on previously published work by Itani et al. (2004).

In the first section, students were asked to rate the importance of 13 areas of leadership knowledge and skills (Table 2) using a 4-point scale (1 = not important, 2 = minimally important, 3 = somewhat important, 4 = important). The students were also asked to rate their own competence in each of these areas (1 = not competent, 2 = minimally competent, 3 = somewhat competent, 4 = fully competent). In the second section, students answered a single question (yes, no, or maybe) for questions on their belief that leadership, communication, teamwork and quality improvement skills should be included in the medical school curriculum. In the
third section, the students were asked to discuss in their own words what attributes or skills were important for a physician leader.

Data analysis

An inductive analysis was performed on the narrative responses derived from focus groups, semi-structured individual interviews and surveys. The unit of analysis was phrases and/or sentences, depending on the data source. Narrative responses were analysed using the constant comparative method associated with grounded theory approaches to identify themes and categories (Lincoln & Guba 1985). Trustworthiness of the data analysis was established by checking inter-rater reliability, member checking, and triangulation (Lincoln & Guba 1985) performed using different data sources and instruments. To establish inter-rater reliability, two of the study investigators independently identified themes and coding categories for each data set, compared results, redefined coding category descriptions as needed and reanalysed the data until at least 80% agreement was reached. Following analysis and synthesis of results, member checking (Russell & Gregory 2003) was performed with all groups surveyed. This was achieved through an electronic notes summary document that was circulated to all study participants. Participants were asked to respond with disagreements or edits to the document.

Descriptive statistics were used to summarize the quantitative data from the student survey instrument. Thematic analysis was conducted for open ended questions.

Results

All individuals invited to the focus group discussions and interviews agreed to participate in the study. Twenty-one of 36 (58%) medical student leaders invited to partake in the surveys participated in the study (13 women and 8 men). Respondents included two first year, six second year, seven third year and two fourth year students; class year was unknown for four respondents.

Focus group and semi-structured interviews

At the start of the focus group, there was considerable discussion about whether leadership is an inherent personality trait or can be taught. The consensus was that although certain individuals may have inherent characteristics that make them better leaders, in general, adequate education, mentoring and experiences could create successful leaders. The categories identified through analysis of participants’ comments were clustered into three overarching areas: qualities, knowledge and skills. Participants identified a number of qualities of excellent physician leaders which we clustered into seven core areas, arranged by decreasing order of frequency of citation (Table 1).

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Table 1. Qualities skills and knowledge needed by physician leaders.

<table>
<thead>
<tr>
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<th>Skills</th>
<th>Knowledge</th>
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<tbody>
<tr>
<td>Emotional Intelligence including: Self-awareness, empathy, cultural sensitivity, professionalism, drive, inspirational and commitment</td>
<td>Teamwork skills</td>
<td>Legal issues and medical practice</td>
</tr>
<tr>
<td>Appropriate balance of confidence and humility</td>
<td>Communication skills including: listening and incorporating others’ views; articulating a vision</td>
<td>Healthcare policy</td>
</tr>
<tr>
<td>Creativity and innovation</td>
<td>Management skills including: conflict resolution, delegating, organization, time management, decision-making, and negotiation</td>
<td>Healthcare finance</td>
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<tr>
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<td>Quality improvement skills</td>
<td>Leadership models</td>
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<td></td>
<td>Community service related to healthcare, including advocacy</td>
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All participants described qualities of emotional intelligence as important in physician leaders. Emotional intelligence was described as including self awareness, empathy, drive, commitment, professionalism and being inspirational. All participants characterized creativity as critical for a successful leader. For example, one of the focus group participants stated that:

Creativity and the ability to innovate is a key characteristic of a successful and visionary leader

Confidence along with humility was also viewed as an important quality of physician leaders. For example, one of the focus group participants commented that:

I think that leaders must possess both humility and self-confidence; the ability to listen and assist others without always having to let people know how great you are.

Four groups of essential skill sets were identified from an analysis of the data: teamwork, communication, management, and community advocacy (Table 1). All participants identified a leader’s ability to work with others in a team as important. For example, one participant suggested:

The key is working well on a team, organizing a team and knowing how to interact with members in the community to advocate for healthcare.
Communication skills were also viewed as important. For example, one participant commented:

*Communication, with all different sorts of people, an ability to communicate appropriately within varied contexts and cultures, is the most important part of leadership.*

The ability to articulate a vision and convince others to work toward this vision was also viewed as an important aspect of communication. One of the CEOs stated that:

*A leader is able to articulate and communicate a vision. She is able to influence a group of people to work together towards a common goal.*

Both focus group participants and interviewees viewed management skills, such as conflict resolution, delegating, time management, decision-making and negotiation as being essential for leaders. For example, one interviewee said:

*Although not given much emphasis in current medical education, it is critical that future healthcare leaders have the skills to prioritize and delegate tasks to maximize outcomes.*

Most participants felt that leaders must be able to identify opportunities for quality improvement (QI) and organize teams to conduct QI activities. For example, one of the interviewees suggested that:

*Physicians need to use systems engineering tools to identify and develop system wide strategies that will collectively improve the quality and safety of care delivered.*

Involvement in community service activities, particularly in advocacy for important healthcare issues, was viewed as an important function of physician leaders. For example, one of the focus group participants said:

*It is important for leaders to be involved in leading efforts that affect the health of the community at large.*

Finally, several focus group participants and interviewees felt that to be effective, physician leaders need an adequate fund of knowledge about medico-legal issues, healthcare policy and finance, and leadership models.

Within the identified content areas, participants prioritized six key topics as necessary for all UME leadership curricula (Table 1). When asked about how leadership should be taught and learned in UME, faculty and administrators favoured experiential learning over traditional didactic approaches and recommended integration of the leadership curriculum into the undergraduate medical curriculum. Examples of suggested experiential learning activities included student leadership activities, administrative internships with institutional leaders, creation of mentored leadership development plans, participating in and leading inter-professional teams, simulation exercises, and participation in QI projects.

**Student surveys**

We report the results of the quantitative part of the survey first, followed by the responses to the open ended questions.

About 85% (18) of students felt that leadership, communication, teamwork, and QI skills should be taught in medical school; the remaining 15% (3) of students stated that “maybe” these skills should be taught. When asked to rate the importance for leaders of 13 areas of knowledge and skills (Table 2), all students rated communication skills and ethics as very important for effective leadership. Each of the other areas of knowledge and skill areas (conflict resolution, time management, managed care, management principles, coding and billing, quality improvement, public speaking, risk management, negotiation, writing proposals) except for investment principles, were rated very important or somewhat important by the vast majority of students.

When asked to rate their competence in the same skills, the vast majority of students perceived themselves as fully or somewhat competent in communication (ethics, conflict resolution, time management and public speaking). The vast majority of students reported minimal or no competence in managed care, coding and billing, writing proposals and

<table>
<thead>
<tr>
<th>Leadership skill</th>
<th>Not important</th>
<th>Minimally important</th>
<th>Somewhat important</th>
<th>Very important</th>
<th>Not competent</th>
<th>Minimally competent</th>
<th>Somewhat competent</th>
<th>Fully competent</th>
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<tr>
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<td>0 (0%)</td>
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<td>0 (0%)</td>
<td>2 (10%)</td>
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<td>10 (50%)</td>
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<td>0 (0%)</td>
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<td>18 (90%)</td>
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<td>4 (20%)</td>
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<td>0 (0%)</td>
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<td>17 (85%)</td>
<td>0 (0%)</td>
<td>7 (35%)</td>
<td>9 (45%)</td>
<td>4 (20%)</td>
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<td>Managed care</td>
<td>1 (5%)</td>
<td>1 (5%)</td>
<td>6 (30%)</td>
<td>13 (65%)</td>
<td>8 (40%)</td>
<td>9 (45%)</td>
<td>2 (10%)</td>
<td>1 (5%)</td>
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<tr>
<td>Management principles</td>
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<td>1 (5%)</td>
<td>7 (35%)</td>
<td>12 (60%)</td>
<td>2 (10%)</td>
<td>11 (55%)</td>
<td>5 (25%)</td>
<td>2 (10%)</td>
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<tr>
<td>Coding and billing</td>
<td>1 (5%)</td>
<td>2 (10%)</td>
<td>5 (25%)</td>
<td>12 (60%)</td>
<td>16 (80%)</td>
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<td>5 (25%)</td>
<td>6 (30%)</td>
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<td>11 (55%)</td>
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<td>6 (30%)</td>
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<td>10 (50%)</td>
<td>5 (25%)</td>
<td>7 (35%)</td>
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<td>9 (45%)</td>
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<td>4 (20%)</td>
<td>7 (35%)</td>
<td>8 (40%)</td>
<td>1 (5%)</td>
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<tr>
<td>Writing proposals</td>
<td>1 (5%)</td>
<td>4 (20%)</td>
<td>10 (50%)</td>
<td>5 (25%)</td>
<td>7 (35%)</td>
<td>11 (55%)</td>
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<td>Investment principles</td>
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<td>7 (35%)</td>
<td>4 (20%)</td>
<td>10 (50%)</td>
<td>7 (35%)</td>
<td>2 (10%)</td>
<td>1 (5%)</td>
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Notes: *One student did not complete the qualitative portion of the survey. *Data missing for one student.
investment principles. A great majority of students reported minimal or no competence in the areas of management principles, quality improvement, risk management and negotiation.

In the qualitative part of the survey, students described empathy, compassion, trustworthiness, ethical and moral standards, and communication skills as important for physician leaders. Student comments about these attributes of physician leaders included:

*Having kindness, and being respectful, and encouraging is essential. [A leader has] the ability to relate to people from all walks of life and communicate ideas in terms they can understand.*

When asked to identify effective elements of the current curriculum for leadership training, the majority of students (62%) stated that clinical rotations offered the greatest opportunities for leadership development. However, many students expressed the view that traditional coursework was not an effective way to teach or learn leadership. An example of such a comment includes:

*Being a student leader (as class representative) is really the only place where I’ve learned some things about being a leader. Most of the lessons are learned through trial and error, not through formal classes.*

*I don’t know if leadership can be taught well in a didactic course – it comes more from experience, especially in terms of extra-curriculars.*

In the third part of the survey, students rated simulation centre exercises (mean score 4.2), small group sessions led by faculty members (mean score 3.9), and case study examples (mean score 3.7) as the most effective teaching methods for leadership training (Table 3). Writing assignments, online modules, didactic lectures, and self-reflective journaling were the teaching methods rated as least effective, with mean scores ranging from 2.0 to 2.3.

| Table 3. Student preferred learning methods for the leadership curriculum. |
|-----------------------------|---------------------------------|
| Learning method             | Mean score of student preference* |
| Simulation                  | 4.2                              |
| Study group – Faculty-led   | 3.9                              |
| Case study examples         | 3.7                              |
| Role play                   | 3.5                              |
| Study group – resident-led  | 3.3                              |
| Study group – peer-led      | 3.2                              |
| Panel discussions           | 3.1                              |
| Visiting professors         | 2.8                              |
| Readings                    | 2.4                              |
| Didactic/lecture-based      | 2.3                              |
| Online modules              | 2.3                              |
| Self-reflection journaling  | 2.3                              |
| Writing assignments         | 2.0                              |

Note: *Range 1–5; 5 being most positive.*

**Discussion**

Medical education, especially at the undergraduate level, has traditionally focused on the diagnosis and management of disease, with little emphasis on the systems issues surrounding healthcare delivery and outcomes, or the team collaboration necessary to achieve safe and high-quality healthcare. Regardless of career track or field of specialization, physicians function in leadership roles in healthcare teams and are considered to be ultimately responsible for the overall outcomes of patient care. In this study, for each leadership competency, student-reported competence was less than the perceived importance of the same competency, supporting the need for a UME leadership curriculum. The data obtained from our study helps to characterize the knowledge and competencies as well as teaching methodologies necessary for an undergraduate leadership curriculum, and lays the groundwork for future scholarly work in this field.

The key qualities identified by study participants for leadership include qualities for emotional intelligence (Goleman 1997) including self-awareness, empathy, cultural sensitivity, professionalism, drive, inspirational, commitment, confidence, and creativity. These qualities are critical for a successful transformational leader who is able to motivate individuals, and facilitate shared leadership towards achieving common goals (Judge & Bono 2000). Although emotional intelligence is shaped by early childhood experiences, it can be developed by learning throughout life (Goleman 1997) and UME provides an outstanding opportunity for this learning.

Communication, conflict resolution, time management, negotiation, delegation, teamwork and community service were the key skills identified by study participants as necessary outcomes for leadership training in UME. Likewise, in a survey of surgery residents, Itani et al. found that residents rated time management, conflict resolution and leadership training as the most important skills for their careers (Itani et al. 2004). In the current residency culture of the 80h work week associated with a higher number of handoffs, an emphasis and introduction to teamwork, communication, conflict resolution, time management and negotiation in the setting of UME, will likely enhance application of these skills in graduate training.

Knowledge of legal issues in medical practice, healthcare policy and financing, as well as leadership theory and models was suggested by all focus group participants as necessary elements to develop basic foundations of a leader. It was noteworthy that medical students felt least competent in areas related to the business of medical practice and basics of leadership theory, perhaps, because these areas have not been taught in a traditional medical curriculum.

There was a strong preference for experiential learning and mentoring by leaders as methods of developing future leaders. This view is confirmed by other studies where administrative and leadership experiences in the context of participation as small group leaders in the classroom setting, administrative rotations, simulated exercises and community projects contributed to the development of optimal leadership styles in medical students (Dobie & Huffine 1994; Tibbitts 1996; Sriratanaeh et al. 1999; McKenna et al. 2004; Brush et al. 2006). Study student participants felt that clinical experiences...
in medical school offered some opportunities for leadership training. An explicit leadership curriculum including role play, team training, community experiences, student leadership opportunities, participation in quality improvement projects and mentored leadership development plans are some of the potential methods to enhance leadership training in UME. This type of education exemplifies Dewey’s philosophy of experiential education and reflection in a contextual learning environment (Dewey 1935).

This study is not without limitations. Although our study generated new knowledge useful to the creation of an UME curriculum on leadership, the participants in this study were a select small group, so generalizations must be made with caution. However, since study findings were consistent when practiced in different settings, it is reasonable to assume that the findings of this study will have relevance to a leadership education curriculum for UME beyond this particular medical school. Introduction of new content will have the inherent challenges of faculty development, time in the curriculum for the new content, curriculum development, and development of appropriate assessment tools.

Mayo Medical School initiated a process of curriculum reform in 2006. Based on the results of this study, one of the changes made in the curriculum was the introduction of an explicit core curriculum on leadership that is integrated into all blocks of year one, with ongoing development of curriculum for the other three years of medical school training. Integration of the leadership theme into the existing curriculum was well received by students and faculty and addressed the challenge of need for time in the curriculum.

Conclusion

Preparing future physician leaders requires training across the continuum of education and requires life long learning. With the introduction of the ACGME competencies, training in systems thinking, team collaboration, communication skills, quality improvement, and insurance systems have become core requirements in graduate medical programs. UME provides an ideal setting to lay the foundation for these leadership competencies. Results of this study provide a framework for the development of such a curriculum in UME. Further research is necessary to study the optimal teaching and assessment methods for a UME curriculum on leadership. Further in-depth qualitative and quantitative studies are needed to delineate the leadership competencies that are most developmentally appropriate for each year of UME and the impact of such a curriculum on leadership outcomes in the future.

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References


