DEVELOPING LEADERSHIP COMPETENCE OF VOCATIONAL EDUCATION STUDENTS THROUGH ROTATING LEADERSHIP AND DIGITAL REFLECTION

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Abstract: Rotating leadership and digital reflection provide a structured method for developing leadership competence in vocational education. Students take turns leading group tasks, receive peer feedback and use self-assessment to adjust their next leadership action. Assessment covers decision-making, coordination, responsibility and reflective self-regulation. A quasi-experimental pretest–posttest design is proposed, with ANCOVA, effect-size estimation and repeated-measures analysis used to evaluate changes in leadership competence.

Keywords: vocational education, leadership, role rotation, digital reflection, competence.

Introduction

Group work does not provide equal leadership experience to all students. In many groups, the same students plan activities, distribute tasks and make decisions, while other members mainly perform assigned work. He et al. [1], in a review of 36 empirical studies, found that student roles affect individual behaviour and group interaction. The authors also showed that productive roles can change during collaborative problem solving. Strijbos and Weinberger [4] found that structured roles can distribute learning functions more evenly among group members. These findings support the rotation of leadership responsibility rather than the permanent assignment of a leader.

Role rotation alone is not sufficient. After leading a task, a student needs evidence about what worked and what should be changed. Eshuis et al. [2] studied 198 first-year technical vocational students. Their online reflection tool combined self-assessment, peer assessment and goal setting. Students who received collaboration instruction together with joint reflection showed better collaborative behaviour and knowledge gains. Sweet [5] also showed that guided reflection helps students analyse experience and define subsequent actions. Reflection is therefore useful when it leads to a specific change in the next performance.

Xiang and Deng [3] studied 1,895 higher vocational students and found links between student leadership, interaction, learning engagement and

social-emotional competence. Kurki et al. [6] showed that vocational students can participate directly in the development of leadership-related learning activities. However, these studies did not combine planned leadership rotation with digital reflection in one repeated learning cycle. The aim of this study is to develop and test a method in which each leadership experience is followed by feedback, reflection and a corrected leadership action.

Materials and Methods

The study uses a quasi-experimental pretest-posttest design with an experimental and a comparison group. Students are selected from comparable vocational programmes and study levels. For a two-group comparison with an expected medium effect (d = 0.50), alpha = .05 and power = .80, at least 64 students are required in each group. Approximately 140 students can be recruited to compensate for possible attrition.

Leadership competence is assessed through four components:

1) Decision-making: identifying the problem, suggesting solutions and making a justified decision.

2) Communication and coordination: distributing tasks, organising discussion and coordinating group actions.

3) Responsibility: monitoring task completion and taking responsibility for the group result.

4) Reflective self-regulation: analysing personal leadership behaviour, using feedback and identifying a specific improvement.

Data are collected through a leadership competence scale, observation rubric, peer assessment and digital reflection records. Using several instruments makes it possible to compare students' self-evaluation with their observed behaviour.

The experimental mechanism consists of eight actions:

1) students receive a vocational problem task;
2) one student is assigned as the temporary leader;
3) the leader distributes functions and coordinates the task;
4) the group develops and approves a common decision;
5) group members assess the leader using fixed criteria;
6) the leader completes a short digital reflection;
7) the student defines one action that should be improved;
8) the leadership role is transferred to another student for the next task.

The digital reflection contains four questions:

1) What decision did I make?
2) How did my action affect the group?
3) What did my peers identify?
4) What will I change in my next leadership role?

The last answer becomes the student's target for the next leadership task. Rotation is therefore connected with correction rather than simple role exchange.

The main outcome is the posttest leadership competence score. ANCOVA is used to compare the experimental and comparison groups while controlling for pretest scores. Statistical significance is set at $p < .05$. The result is reported together with a 95% confidence interval and an effect size.

The four components are also analysed separately. Cronbach's alpha or McDonald's omega is used to assess scale reliability. When two observers assess the same performance, inter-rater reliability is calculated. Changes across several leadership rotations are examined with a linear mixed-effects model. Student is treated as a random effect and leadership cycle as a repeated predictor. This analysis shows whether leadership behaviour improves from one rotation to the next.

Results and Discussion

The proposed method combines two processes. The first is the distribution of leadership practice. The second is the correction of leadership behaviour. Role rotation gives different students direct experience of planning, coordination, decision-making and responsibility. This corresponds with the findings of He et al. [1], who showed that changing student roles can influence participation and interaction. It also follows the position of Strijbos and Weinberger [4] that roles should give students access to functions that may otherwise remain concentrated among a few group members. Digital reflection connects one leadership task with the next. The student does not simply write whether the task was successful. The reflection must identify an observable action. For example, if the leader made the final decision without collecting all group members' proposals, this weakness is recorded. In the next leadership task, the student may be required to collect one proposal from every participant before the decision is made. This makes reflection measurable in the next cycle. The approach follows the findings of Eshuis et al. [2], who demonstrated the value of self-assessment, peer assessment and goal setting in technical vocational education. In the present study, these elements are applied specifically to leadership behaviour. Peer assessment provides external evidence, while digital reflection requires the student to convert this evidence into one corrective action.

Leadership competence should not be assessed only through a questionnaire. Xiang and Deng [3] showed that leadership among vocational students is connected with interaction and learning engagement. For this reason, competence is assessed through both scores and observed group behaviour. A student demonstrates leadership competence when he or she can make a

justified decision, coordinate group members, accept responsibility, respond to feedback and change the next action.

The effectiveness of the method is tested at two levels. First, posttest leadership competence in the experimental group is compared with the comparison group after controlling for baseline scores. Second, changes across repeated leadership cycles are analysed. This makes it possible to determine whether improvement is associated with repeated role performance and digital reflection.

Conclusion

The proposed method combines rotating leadership with digital reflection. Rotation gives each student practical experience in decision-making, coordination and responsibility. Digital reflection helps the student identify a specific weakness and correct it in the next leadership task.

The method follows five steps:

1) leadership task;
2) peer assessment;
3) digital reflection;
4) corrective action;
5) new leadership task.

Its effectiveness can be tested through a pretest-posttest quasi-experimental design, ANCOVA, effect-size analysis and repeated-measures modelling. The main feature of the approach is that leadership is practised repeatedly by different students and each new leadership task is connected with feedback from the previous one.

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