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REVIEWER'S REPORT

Manuscript No.: IJAR-59730

Title: Cultivating Self-Efficacy in University Science and Technology Student Clubs.

Recommendation: Major revision required

Rating	Excel.	Good	Fair	Poor
Originality		YES		
Techn. Quality			YES	
Clarity		YES		
Significance		YES		

Reviewer's ID: JPR- 212

Detailed Reviewer's Report

This manuscript examines the gap between idea generation, implementation and dissemination of innovative behaviour among members of university science and technology clubs in China, and proposes four practical pathways for cultivating self-efficacy in this setting. The paper is well written, thoughtful and pedagogically useful, and its central observation is a genuine one. However, several methodological and reporting weaknesses must be addressed before publication.

Strengths

The core observation is genuinely interesting. The gradient from idea generation (4.52) through implementation (4.34) to dissemination (4.31) is interpreted as a gradient from "easiest to think up" to "hardest to make visible," and this reading is both elegant and well supported by the argument that follows.

The paper is commendably modest about its evidence base. It explicitly states that the evidence is cross-sectional, self-reported and drawn from a single institution, and that the proposed account is "a set of propositions to be tested rather than established effects." This honesty is a real strength.

The theoretical grounding in Bandura's four sources of efficacy beliefs, and the emphasis on mastery experience and vicarious experience, is appropriate and well integrated into the argument.

The four proposed pathways are practically valuable and clearly stated. The distinction between artifacts over events, support to people over equipment, tiering tasks by stage, and making senior members visible as models is well articulated and could be implemented in a range of institutional contexts.

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The section on "ways the approach loses its shape" is a genuinely valuable contribution, particularly the warning against turning tiering into screening and against turning models into publicity. These are realistic concerns that practitioners will recognise.

The prose is of a high standard throughout. This is one of the few manuscripts in this batch that is genuinely well written.

Major Weaknesses

Sample and survey are under-reported. The manuscript reports a survey of 98 members, but it does not state which institution the members come from, how the sample was selected, what the response rate was, how many clubs were involved, or when the survey was administered. The reader cannot assess the representativeness of the sample or the reliability of the findings.

Instrument is not described. The manuscript reports scores on innovative behaviour and self-efficacy scales but does not state what instruments were used, how many items each scale contained, what the reliability coefficients were, or whether the instruments were validated in Chinese. The self-efficacy scale is described as a four-point scale and the innovative behaviour scale as a five-point scale, but no further detail is provided. This is a serious omission.

No tables or figures. The manuscript reports numerical findings in prose but provides no table of descriptive statistics, no table of correlations, and no regression analysis. The claim that "self-efficacy, 3.29 of 4, positively predicted it" is stated in the abstract, but no regression coefficients, no significance values, no effect sizes and no explained variance are reported. The reader has no way to assess the strength or significance of the predictive relationship.

Statistical analysis is not described. The manuscript does not state what statistical techniques were used, whether the analysis controlled for year of study, gender, discipline or club type, or how missing data were handled. The finding that first-year members reported the highest efficacy (3.36) yet scored lower than fourth-year members on implementation and dissemination is interesting, but it is not clear whether this difference is statistically significant.

Theoretical framing of the gap is underdeveloped. The manuscript attributes the gap to the difficulty of implementation and dissemination, but it does not consider alternative explanations, such as differences in self-report bias across items, differences in the visibility of dissemination activities, or the possibility that the dissemination items are simply harder to interpret. The argument would be strengthened by considering and ruling out alternative explanations.

Reference base is very thin. The manuscript cites only four references, three of which are Chinese-language sources from 2013 to 2015 and one of which is Bandura's 1977 article. There is no engagement with the substantial body of international literature on

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self-efficacy in educational settings, on undergraduate innovation, on makerspaces and hackspaces, or on project-based learning in science and engineering. The paper would benefit considerably from engagement with this literature.

Single-institution limitation is acknowledged but not addressed. The manuscript recognises that the evidence comes from a single institution but does not discuss how institutional context (type of university, discipline mix, resourcing of clubs) might shape the findings. Given the policy relevance of the paper, this would be a useful addition.

Minor issues. The abstract is too compressed and reads as a series of unconnected numerical fragments. The keyword list could be expanded slightly. The phrase "science and technology clubs" should be defined more precisely, since the term may refer to different types of organisation in different institutional contexts. The references use a numbered citation style that is inconsistent with the journal's usual format.

Recommendation

Major revision required. This manuscript offers a thoughtful and practically useful contribution, but it currently lacks the methodological reporting expected of an empirical study. The authors should first provide a full description of the sample, including the institution, sampling procedure, response rate, number of clubs involved and timing of data collection. Second, they should describe the instruments used, including the number of items, the response format, the reliability coefficients and the validation procedure. Third, they should provide tables of descriptive statistics, correlations and regression results, with coefficients, significance values and explained variance, to substantiate the claim that self-efficacy positively predicts innovative behaviour. Fourth, they should state the statistical techniques used and the variables controlled for. Fifth, they should consider and rule out alternative explanations for the observed gap. Sixth, they should expand the reference base to engage with international scholarship on self-efficacy, undergraduate innovation and project-based learning. Seventh, they should revise the abstract so that it reads as a coherent summary rather than a list of numerical fragments. With these revisions, the manuscript could make a valuable contribution to the literature on practice-based education in science and technology clubs.