

Integrating Quantitative Results and Qualitative Findings on the Coordination of Clinical Education and Training of Undergraduate Nursing Students: A Convergent Mixed-Methods Study

Nelson Lebogo

Bshwane University of Technology, South Africa

*Corresponding Author: Nelson Lebogo, Tshwane University of Technology, South Africa.

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Abstract

Background: Coordination between higher education institutions and clinical facilities remains a persistent challenge in undergraduate nursing education, with implications for students' learning opportunities, morale, and readiness for professional practice.

Aim: This paper reports the data-integration phase of a larger design and developmental research (DDR) study that developed a mobile application to coordinate clinical education and training (CET) for undergraduate nursing students at a university in Gauteng, South Africa.

Methods: A convergent mixed-methods design was used. Quantitative data were collected via an online questionnaire administered to nursing students ($n = 124$ of a population of 180), and qualitative data were collected through five semi-structured focus group discussions with nursing students ($n = 26$) and teaching and learning facilitators ($n = 3$). The two datasets were analysed separately, then merged and integrated using a narrative and joint display approach, with relationships between the datasets classified as convergent, complementary, expansion, or divergent. The Data Information Literacy framework guided the translation of integrated findings into application design requirements.

Results: Integration produced five themes: positive views on coordination; communication challenges; coordination challenges; consequences of coordination challenges; and recommendations for improvement. The qualitative and quantitative datasets addressed partly different objectives, so full convergence was uncommon; expansion and complementarity relationships predominated. Two overarching conclusions emerged: a need for more efficient coordination and communication in CET, and students' evident readiness to adopt digital technology for this purpose.

Keywords: Data Integration, Convergent Mixed Methods, Joint Display, Clinical Education and Training, Nursing Students, Mobile Health Application

Introduction

Work-integrated learning is central to the preparation of competent, safe nursing practitioners. Yet, its coordination across universities and clinical facilities is frequently undermined by fragmented communication, inconsistent placement planning, and inadequate monitoring of clinical hours [1, 2]. These coordination gaps can widen the theory-practice divide, reduce students' learning opportunities, and erode morale [3]. Digital technologies, including mobile applications, have been proposed as a

means of strengthening communication, tracking clinical hours, and supporting timely feedback between students, clinical preceptors, and academic staff [4, 5].

This paper reports the data-integration component of a broader design and developmental research (DDR) study that developed a mobile application to coordinate clinical education and training (CET) of undergraduate nursing students at a university in Gauteng, South Africa. In the planning phase of the study, quan-

titative and qualitative data were collected and analysed separately to explore stakeholders' views on the current coordination of CET, the challenges they experienced, and students' readiness to adopt mobile technology. The purpose of this manuscript is to describe how these two strands of evidence were merged, integrated, and interpreted using a joint display approach, and how the integrated findings were translated into requirements for the mobile application [6].

Methods

Research strategy and design

The overarching research strategy was a multi-phased design and developmental research (DDR) approach comprising planning, development, implementation, and evaluation phases. The planning phase, from which the data reported here derive, employed a convergent (one-phase) mixed-methods design, in which quantitative and qualitative data are collected, analysed separately, and then merged so that the results can be compared for convergence or divergence [6, 7].

Setting and participants

The study was conducted at a university in Gauteng and its affiliated clinical training platforms (hospitals and clinics). Two purposively selected participant groups took part: undergraduate nursing students in the second, third, and fourth levels of study, and teaching and learning facilitators (lecturers, clinical preceptors, and clinical placement coordinators) responsible for supervising and coordinating clinical placements. A two-tier sampling design combined purposive sampling (qualitative strand) with total population sampling (quantitative strand) to enhance representativeness.

Data Collection

Qualitative data were gathered through five semi-structured focus group discussions: four with nursing students (26 participants across levels) and one with teaching and learning facilitators

(3 participants), guided by an interview schedule that was piloted with three postgraduate students outside the study population. Quantitative data were gathered using an online, self-administered questionnaire covering demographics, ownership and use of mobile devices, use of health-related applications, and preferred communication channels; 124 of a possible 180 students responded.

Data analysis

Qualitative data were analysed using thematic content analysis, supported by ATLAS.ti software and an independent co-coder, following the steps of familiarisation, initial coding, theme generation, theme review, theme naming, and reporting. Quantitative data were analysed using descriptive statistics (frequencies and percentages), consistent with the classifications proposed by [8, 9].

Data integration approach

Following separate analysis, the two datasets were merged and integrated using the narrative and joint display approach described by, in which a tabular joint display juxtaposes quantitative results and qualitative findings for each theme, a linking activity connects the two strands, and an interpretive label characterises the relationship between them. Four relationship labels were applied throughout: convergence, where the two datasets agree; complementarity, where the datasets differ but are not contradictory; expansion, where overlapping findings extend one another and provide additional insight; and divergence, where the datasets conflict [10]. Because the quantitative strand addressed students' readiness to use mobile technology while the qualitative strand addressed the coordination of CET more broadly, the qualitative findings served as the primary basis for the integrated themes, with quantitative results used to corroborate, extend, or contextualise them [7]. The steps of the integration process are summarised in Table 1.

Table 1: Data Integration Process

Step	Activity	Application in this study
Creating a joint display	Table combining quantitative results and qualitative findings	Themes organised by research objective
Linking activity	Forming a link between the two datasets	Discussion of each theme, subtheme by subtheme
Establishing relationships	Applying the labels convergence, complementarity, expansion, or divergence	Comparative interpretation and conclusion for each sub-theme
Interpreting and reporting	Discussing and reporting the synthesised findings	Theme-by-theme narrative linked to the literature

Source: adapted from [10].

Theoretical framework

The Data Information Literacy (DIL) framework provided the overarching theoretical structure for the study, describing four phases of mobile application development: planning, development, implementation, and evaluation. The data integration reported here corresponds to the transition from the planning to the development phase, during which the integrated evidence

base was translated into concrete design requirements for the application [11].

Ethical considerations

Ethical approval was granted by the University A Research Ethics Committee and the University B Faculty of Health Sciences Research Ethics Committee. Gatekeeper permission was ob-

tained from the participating hospitals, the National Department of Health, and the university's School of Nursing. Informed consent was obtained from all participants; participation was voluntary, and confidentiality and anonymity were maintained through participant codes.

Results: Integration Of Quantitative And Qualitative Data
Integration produced five themes, each comprising several sub-themes, summarised in **Table 2**.

Table 2: Themes and Sub-themes

Theme	Subthemes
1. Positive views on the coordination of CET	Competence; socialisation and support; clinical governance; theory-practice integration
2. Communication challenges in the coordination of CET	University-clinical facility communication; lecturer-preceptor-student communication; students' complaints
3. Coordination challenges of CET	Clinical facility-related challenges; student-related challenges; university-related challenges
4. Consequences of coordination challenges	Low student morale; missed clinical and learning opportunities; mismanagement of students
5. Recommendations to improve coordination and communication	Placement planning; university-facility communication; student communication channels; monitoring of hours and workbooks; a mobile application; preceptor support

Theme 1: Positive Views on Coordination of Clinical Education And Training

Table 3 presents the side-by-side comparison of quantitative

results and qualitative findings for this theme before the two datasets are merged and discussed.

Table 3: Theme 1 side-by-side comparison of quantitative results and qualitative findings

Subtheme	Qualitative findings	Quantitative results	Relationship
Competence across clinical experiences	Exposure to varied institutions and specialities-built confidence: "It's being put in big hospitals ... there's a variety of things that you can learn from" (St-2 Yr4 R425).	91% (n=117) used health-related apps in clinical settings, mainly for learning (51.5%) and patient care (39.8%)	Expansion
Socialisation and support	Clinical nurses and preceptors described themselves as willing to teach one-on-one and check in regularly.	Nurses (78.9%), preceptors (76.5%), clinical placement coordinators (70%), and doctors (69.5%) rated as helpful/supportive	Convergent
Clinical governance	Detailed workbook procedures are described as well-documented and organised	Multiple healthcare team members identified as supportive, corroborating the need for coordinated governance.	Expansion
Theory-practice integration	Students reported being able to link classroom theory to real clinical situations.	Not measured	No relationship

Participants described several strengths in the current coordination arrangements. Qualitatively, students attributed their growing competence to exposure to varied clinical experiences, institutions, and specialities, describing how supervision by experienced nurses and preceptors built their confidence step by step. Quantitatively, the majority of students (91%, n = 117) reported using health-related applications in clinical settings, mainly for learning (51.5%) and patient care (39.8%), a result that expands on, rather than directly confirms, the qualitative accounts of competence development.

Students also described strong socialisation and support from

clinical nurses, preceptors, and clinical placement coordinators, who they experienced as willing and available teachers. This was convergent with the quantitative results, in which nurses (78.9%), preceptors (76.5%), clinical placement coordinators (70%), and doctors (69.5%) were rated as helpful and supportive sources of information. Regarding clinical governance, students described detailed planning processes involving communication among the nursing directorate, the university, and health professionals; the quantitative results, showing that multiple healthcare team members contributed to student support, expanded on this account. Regarding the theory-practice relationship, students reported being able to connect classroom learning to real

clinical situations. However, the questionnaire did not address this subtheme directly, so no quantitative relationship could be established.

These findings are consistent with the wider literature: effective coordination and supervision are recognised as central to producing competent, independent practitioners, and formal agreements between institutions and clinical facilities are considered essential preconditions for adequate clinical accompaniment [1-3]. Clinical governance, understood as effective communication,

teamwork, education, and training, underpinned participants' positive experiences. In contrast, supervisory skills such as critical reflection and communication were identified as mechanisms through which preceptors supported student learning[12-14].

Theme 2: Communication Challenges in the Coordination of Clinical Education and Training

Table 4 presents the side-by-side comparison of quantitative results and qualitative findings for this theme.

Table 4: Theme 2 side-by-side comparison of quantitative results and qualitative findings.

Subtheme	Qualitative findings	Quantitative results	Relationship
University-clinical facility communication	Students arrived at placements to find their names absent from the CETU allocation lists	32.8% received feedback the same day; 19.5% waited longer than a week	No relationship (mutually supportive)
Lecturer-preceptor-student communication	Preceptors are often unaware of classroom content; mismatched specialities are assigned	52% reported inadequate support for clinical learning; 76.5% still rated preceptors as valuable	No relationship
Students' complaints	Complaints to lecturers, preceptors, and clinical staff are not taken seriously	52% perceived negative attitudes from students/staff; 50% from patients	No relationship

Alongside these strengths, participants identified communication breakdowns at three levels. Between the university and clinical facilities, students described arriving at placements to find their names absent from allocation lists kept by clinical education and training units (CETUs); teaching and learning facilitators similarly stressed the importance of timely placement information. The quantitative data on communication channels and response times (for example, 32.8% of students received feedback the same day, while 19.5% waited longer than a week) were not directly comparable to the qualitative accounts. Still, they were mutually supportive of the conclusion that communication is inconsistent.

Between lecturers, preceptors, and students, participants described a disconnect in which preceptors were often unaware of what had been taught in class, or students were assigned preceptors from unrelated specialities. Quantitatively, just over half of students (52%) reported inadequate support for clinical learning, even though 76.5% rated preceptors as a valuable source of information; no direct relationship was established, but the

two findings pointed to the same underlying problem. Students also reported that their complaints were not taken seriously by staff, corroborated by the finding that 52% and 50% of students, respectively, perceived negative attitudes from fellow students/staff and from patients.

These results echo prior evidence that poor inter-institutional communication isolates students and undermines assessor familiarity with what has been taught, and that mobile applications can address such gaps through convenient, efficient, and timely feedback mechanisms further requires that institutions provide, and demonstrate the use of, a formal mechanism for handling student complaints, a mechanism that participants indicated was currently absent [3-17].

Theme 3: Coordination challenges of clinical education and training

Table 5 presents the side-by-side comparison of quantitative results and qualitative findings for this theme.

Theme 3: Coordination challenges of clinical education and training

Table 5 presents the side-by-side comparison of quantitative results and qualitative findings for this theme.

Table 5: Theme 3 side-by-side comparison of quantitative results and qualitative findings.

Subtheme	Qualitative findings	Quantitative results	Relationship
Clinical facility-related challenges	Understaffing; difficulty obtaining signatures; negative staff attitudes; duties unrelated to learning outcomes	Negative attitudes of students/staff (52%); negative attitudes of patients (50%); lack of IT training/support (52%)	Convergent

Student-related challenges (personal and academic)	Difficulty balancing study and clinical work; absenteeism; reports of dishonesty	The same barrier items above (52%, 50%) did not align with students' own accounts	No relationship
University-related challenges	Difficulty capturing clinical hours; short, fragmented placements; inconsistent alphabetical allocation	Not measured	No relationship

Participants attributed coordination difficulties to three sources. Clinical facility-related challenges included understaffing, difficulty obtaining signatures for completed activities, and being assigned duties unrelated to learning outcomes; these converged with quantitative findings that 52% of students identified negative attitudes among staff and students, 50% identified negative attitudes among patients, and 52% identified inadequate IT training and support as barriers to using mobile applications in clinical areas. Student-related challenges, such as difficulty balancing academic and personal commitments, showed no clear quantitative counterpart.

University-related challenges included inconsistent, alpha-

betically based placement allocation rather than allocation informed by students' placement histories; integrated (rather than block) placement schedules that limited the depth of exposure; unavailable administrators to capture clinical hours; and a persistent theory-practice gap in which classroom content lagged or diverged from clinical exposure. No comparable quantitative measure existed for these subthemes. These findings align with comparable South African research similarly found that only 62.2% of students completed required clinical skills and that over half experienced a theory-practice gap. However, preceptor availability was rated more favourably in that study than in the present one, illustrating how local contextual factors shape coordination experiences [1].

Theme 4: Consequences of coordination challenges

Table 6 presents the side-by-side comparison of quantitative results and qualitative findings for this theme.

Table 6: Theme 4 side-by-side comparison of quantitative results and qualitative findings.

Subtheme	Qualitative findings	Quantitative results	Relationship
Low student morale	Reduced participation and confidence; anger from unsupervised, unplaced students; some students forged workbook signatures	No quantitative data	No relationship
Missed clinical and learning opportunities	Lost hours during placement confusion; assigned tasks outside the scope of learning; inadequate supervision	No quantitative data	No relationship
Mismanagement of students in clinical practice	Reports of hostility, name-calling, and preferential treatment of students from other institutions	No quantitative data	No relationship

The coordination difficulties described above carried consequences for students. Qualitatively, students reported reduced participation and confidence, anger, and a lack of supervision from clinical staff when placement information had not been received, and, in some cases, dishonest behaviour, such as forging workbook signatures to record clinical hours that had not been supervised. Students also described missed clinical and learning opportunities arising from placement confusion, being assigned tasks outside their learning scope, and a lack of supervision, as well as instances of mismanagement, including hostility, name-calling, and preferential treatment of students from other

institutions. No quantitative data directly addressed these consequences, so that no relationship could be established between the two datasets; therefore, the qualitative findings served as the sole evidentiary basis for this theme.

Comparable challenges have been reported among nursing students in Saudi Arabia, where poor communication contributed to distrust, dissatisfaction, and breakdowns in the learning process, and where absenteeism and unclear expectations led to lost learning opportunities and inadequate preparation for clinical tasks [18].

Theme 5: Recommendations to improve coordination and communication

Table 7 presents the side-by-side comparison of quantitative results and qualitative findings for this theme.

Table 7: Theme 5 side-by-side comparison of quantitative results and qualitative findings.

Subtheme	Qualitative findings	Quantitative results	Relationship
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Improved clinical placement planning and coordination	Requests for student representation, communicated year plans, and a shift to a block placement system	97.6% own smartphones; 89.8% would use a university mobile app	Expansion
Improved university-clinical facility communication	Requests for joint meetings, shared workbooks/objectives, and email as the primary channel.	Email was rated the most preferred channel (86.7%)	Convergent
Effective student communication channels	Requests for a channel that tracks placement activities and responsibilities	Preferred channels: email (86.7%), WhatsApp (82.8%), in-person (73.4%)	Expansion
Improved monitoring of clinical hours and workbooks	Requests for confirmed (not just signed) hours and two-factor verification using staff identifiers	Not directly measured	No relationship
Mobile application to improve communication	Requests for a downloadable app for communication, policies, and absenteeism alerts	89.8% would use a university-developed mobile app	Convergent
Support from clinical preceptors	Requests for greater preceptor visibility and support with complaints	Preceptors rated a valued and supportive source of information (76.5%)	Expansion

Participants' recommendations showed the clearest expansion relationships between the two datasets. Students recommended greater involvement in placement planning (including student representation and communicated year plans), a shift from integrated to block placement systems to allow deeper clinical exposure and reduce the theory-practice gap, improved communication between the university and clinical facilities (including email as a primary channel and confirmation of placement before arrival), dedicated student communication channels, stronger verification of clinical hours (for example, two-factor confirmation using clinical staff identifiers), and greater visibility and support from preceptors. Teaching and learning facilitators additionally recommended a centrally managed mobile application to reduce administrative burden.

The quantitative results expanded these qualitative recommendations: the great majority of students owned smartphones (97.6%) and rated their computer skills as good to excellent (89%); email (86.7%), WhatsApp (82.8%), and in-person communication (73.4%) were the most preferred communication channels; and 89.8% of students indicated they would use a university-developed mobile application to improve coordination of CET. Taken together, the qualitative recommendations specified what an application should do, while the quantitative results confirmed that the target population had the means and willingness to use it. This is consistent with prior findings that a block placement system can alleviate academic workload concerns and strengthen the theory-practice link that engaging students in placement decisions improves their experience and that mobile technology broadens access to information, supports clinical decision-making, and bridges the theory-practice gap [1-19].

Application of the integrated findings to application design

Consistent with the planning phase of the DIL framework, the integrated findings were translated directly into design requirements. Miscommunication between the university, clinical facilities, and stakeholders informed the inclusion of email-based communication as a primary channel; facility- and university-related challenges informed features for tracking clinical hours, calculating hours per speciality, and confirming attendance; and the theory-practice gap and missed learning opportunities informed the inclusion of learning-outcome content within the application. Recommendations regarding reporting, absenteeism management, and information-sharing were incorporated in full, while matters not directly related to application design, such as inter-institutional favouritism, smartphone-related security risks, and policy on mobile device use in clinical practice, were retained as recommendations for future investigation rather than incorporated into the current design [11].

Integrative Conclusions

Because the quantitative strand addressed readiness to use mobile technology while the qualitative strand addressed coordination of CET more broadly, full convergence across all sub-themes was neither expected nor achieved; complementarity and expansion relationships predominated, and several subthemes, particularly consequences of coordination challenges, had no quantitative counterpart at all. Two overarching conclusions were nonetheless drawn from the integrated evidence. First, there is a demonstrable need for more efficient coordination and communication in clinical education and training, reflected in miscommunication among stakeholders, facility- and university-related challenges, a persistent theory-practice gap, missed learning opportunities, and insufficient preceptor support. Second, nursing students showed clear readiness to adopt digital

technology to address these gaps: nearly all owned smartphones, rated their digital literacy favourably, and a substantial majority were willing to use a university-specific mobile application for coordination.

Extending the Integration: From Evidence to Application Design
The data-integration exercise was carried forward into the conceptual framework and application design stage, where the two overarching integrative conclusions were translated into design

requirements. This translation was presented narratively, without re-applying the convergence, complementarity, expansion, and divergence typology used. Applying that typology explicitly at this stage strengthens the audit trail between evidence and design decisions. It makes visible, rather than glossing over, where the two datasets could not be compared. Tables 8 and 9 rework this stage of the integration under the two overarching themes identified: the need for more efficient coordination and communication, and students' readiness to use digital technology.

Table 8: Integration of Theme 1 (need for coordination and communication) carried into application design.

Subtheme	Qualitative finding	Quantitative result	Relationship	Design implication
University-facility communication	Students absent from the CETU allocation lists on arrival	32.8% received feedback the same day; 19.5% waited more than a week	Complementary	Automated placement notifications
Facility-related challenges	Understaffing; difficulty obtaining signatures	52% cited negative staff attitudes; 52% cited lack of IT support	Convergent	Facility onboarding and support features
University-related challenges	Alphabetical rather than history-based placement; integrated system limits depth of exposure	No comparable measure	No relationship (qualitative-only)	Placement logic informed by placement history
Theory-practice gap	Classroom content lags or diverges from clinical exposure	Not measured	No relationship (qualitative-only)	Learning outcomes linked to placement
Missed hours and learning opportunities	Lost hours during placement confusion; forged signatures	No comparable measure	No relationship (qualitative-only)	Real-time hour tracking; two-factor confirmation
Preceptor support	Preceptors described as unavailable or hostile in places	76.5% still rated preceptors as a valued information source	Divergent	Preceptor visibility and accountability features

Table 9: Integration of Theme 2 (readiness to use digital technology) carried into application design.

Subtheme	Qualitative finding	Quantitative result	Relationship	Design implication
Device ownership and literacy	Students describe routine smartphone use	97.6% own smartphones; 89% good-to-excellent computer skills	Convergent	Confirms digitalisation readiness
Communication channel preference	Students want a single, trackable channel	Email 86.7%; WhatsApp 82.8%; in-person 73.4%	Convergent	Email as primary in-app channel
Willingness to adopt a university app	Students and facilitators explicitly recommend an app	89.8% would use a university-developed app	Convergent	Justifies the application as the intervention
Use of existing health apps	Students report using apps less for clinical purposes	About 50% used health apps for learning or patient care during shifts	Expansion	Address infrastructure and IT-support barriers alongside adoption

Lessons Learned from Partial Integration

Several subthemes in Tables 8 and 9 could not be assigned a convergence, complementarity, expansion, or divergence code because no comparable quantitative measure existed. This pattern is diagnostic rather than incidental: the questionnaire was designed to measure readiness to use mobile technology, while the focus group discussions explored the coordination of clinical education and training more broadly. The two strands overlap at their edges, for example in communication channels and preceptor support, but diverge everywhere else. Explicitly reporting the proportion of qualitative-only subthemes, as done here, is more transparent than presenting only the subthemes that happened to align.

Three lessons follow. First, incomplete integration is frequently a design-stage mismatch rather than an analysis-stage failure; no joint-display technique, however rigorously applied, can manufacture a comparison that the original instruments were not built to support. Second, qualitative-only findings are not a dead end: they can be treated as candidate indicators for a future quantitative or evaluation phase, for instance, converting 'missed clinical hours due to placement confusion' into a measurable item in a subsequent instrument. Third, a meta-inference can still be drawn even where no shared metric exists, since strong qualitative evidence of coordination failure and strong quantitative evidence of technology readiness jointly justify the same intervention without either dataset needing to confirm the other's specific claims.

Recommendations for Future Mixed-Methods Integration

For researchers designing a convergent mixed-methods study, four measures at the design stage would reduce the likelihood of partial integration. Objectives for the quantitative and qualitative strands should be mapped onto a shared conceptual matrix before data collection, so that each anticipated qualitative theme has at least one corresponding quantitative item, and vice versa [10]. The joint display itself should be piloted with placeholder data before fieldwork begins to identify columns that are likely to remain empty, so there is still time to add items that address the gap. Where the qualitative and quantitative questions are inherently unequal in scope, an explanatory or exploratory sequential design may be more appropriate than a convergent design, since convergent designs assume a rough parity of coverage between strands [7]. Finally, the plan for handling and reporting subthemes with no quantitative or qualitative counterpart should be specified in advance, so that partial integration is anticipated and reported as designed-for, rather than discovered and worked around only once the data have been collected.

Discussion

This integration exercise illustrates both the value and the limits of joint display methods when the quantitative and qualitative strands of a mixed-methods study are designed to answer partially different objectives. Where the two datasets addressed overlapping ground, notably participants' recommendations and their views on support from clinical staff, the joint display revealed clear expansion and convergence, strengthening confidence in

the resulting design requirements. Where the datasets addressed different grounds, as with the consequences of coordination challenges, the joint display still had value: it made explicit, rather than obscured, the absence of a quantitative counterpart, which is itself a finding relevant to future evaluation instrument design [10].

The findings reaffirm a wider evidence base indicating that inadequate coordination and communication between nursing education institutions and clinical facilities compromises students' clinical learning experiences, and that mobile technology, when designed around evidence of stakeholder need and readiness, offers a feasible mechanism for addressing these gaps [18-22].

Limitations

The quantitative and qualitative components addressed only partially overlapping objectives, which limited the extent to which relationships between the two datasets could be established for several subthemes. The study was conducted at a single university and its affiliated clinical platforms, which may limit the transferability of the specific coordination challenges identified. However, the integration methodology itself is transferable to comparable settings [23].

Conclusion

Integrating quantitative results and qualitative findings through a narrative and joint display approach provided a transparent, auditable basis for combining numeric and narrative evidence on the coordination of clinical education and training. The integrated evidence consistently pointed to inadequate coordination and communication as the central problem and to nursing students' strong readiness to adopt mobile technology as part of the solution. These integrated conclusions directly informed the design requirements for a mobile application intended to improve coordination and communication of clinical education and training for undergraduate nursing students.

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