**Additional file 4.**

Results relating to models and theoretical frameworks *conceptualizing* adaptive expertise, adaptive performance or a related concept (column 2) and results relating to models and theoretical frameworks for *characteristics related to* adaptive expertise, adaptive performance or a related concept (column 3).

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| **Reference** | **Results relating to models and theoretical frameworks conceptualizing adaptive expertise, adaptive performance or a related concept** | **Results relating to models and theoretical frameworks for characteristics related to adaptive expertise, adaptive performance or a related concept** |
| Baard, S.K., Rench, T.A. & Kozlowski, S.W.J. (2014) | Their architecture is a means to add precision to the conceptualization of adaptation in research by integrating other models, frameworks and theories to articulate the nature of adaptation, relevant levels and mechanisms incorporated in the specific conceptualization. The architecture is based on three critical dimensions: (a) changes in task features (that may be driven by environmental shifts) that represent different dimensions of task complexity (b) one or more focal levels of analysis that are relevant to the nature of the adaptation phenomenon, and (c) adaptation process mechanisms that underlie adjustments to the change.  Visualization: Page 90. (Baard et al., 2014). | Not mentioned |
| Ward, P., Gore, J., Hutton, R., Conway, G.E. & Hoffman, R.R. (2018) | An integrated macro-cognitive model of adaptive skill, which merges the sensemaking model and the flexecution model of adaptive planning (adapted from literature). It describes a way in which adaptive skill can be conceived. They proposed a unified conceptual model of macro-cognition that directly integrates the sensemaking model and the flexecution model of adaptive replanning.  Visualization: Page 40. (Ward et al., 2018). | This complexity-preservation approach emphasizes the need for case-based learning in those domains that require an understanding of situational dynamics, interacting processes, simultaneous events, emergent properties and nonlinear causation, all of which are particularly difficult for learners to handle.  Visualization: Page 40. (Ward et al., 2018). |
| Park, S. & Park, S. (2019) | Not mentioned | Based on the review, they developed a model for antecedents of employee's adaptive performance. The model also identifies what organizations can do to enhance employees’ adaptive performance. It includes four dimensions of antecedents of adaptive performance: 1) individual characteristics; 2) job characteristics; 3) group characteristics; 4) organizational characteristics.  Visualization: Page 311. (Park & Park, 2019). |
| Foster, C.J., Plant, K.L. & Stanton, N.A. (2019) | Not mentioned | The grounded theory approach resulted in the identification of nine factors: 1) using experience; 2) strategies & informal practice; 3) acquiring knowledge; 4) unpredictability of consequences; 5) trade-off for performance; 6) skills needed; 7) violations; 8) improvisation & creativity; 9) procedures & rules.  No visualization. |
| Wallin, A., Nokelainen, P. & Mikkonen, S. (2019) | Not mentioned | An analysis of the included studies resulted in five central elements of expert learning in work-based higher education (WBHE): 1) knowledge transformation and integration; 2) problem solving; 3) reflection; 4) learning from errors; 5) boundary crossing. A review of the studies showed that knowledge transformation and integration is at the heart of expertise development in WBHE, however four other main elements describe key components in this developmental process via different aspects.  Visualization: Page 368. (Wallin et al, 2019). |
| Kua, J., Lim, W.S., Teo, W. & Edwards, R.A. (2021) | In the introduction they mention the optimal adaptability corridor. The balance between innovation and efficiency forms the basis of this hypothetical corridor. The corridor reflects the learning trajectory for developing adaptive expertise where learners are high on both dimensions of innovation and efficiency. This is aligned with the educational concept of preparation for future learning (PFL) where the focus is on teaching to build on the learner’s ability to transfer and adapt, using their prior knowledge to support future learning.  No visualization. | Factors influencing development include: predisposing factors such as knowledge (ability to integrate knowledge and innovate), beliefs and attitudes (high motivation and humility), enabling factors, such as skills (people skills, implementing reflection and scholarly activities), resources such as curricular enablers (providing variability of cases, allowing flexibility to generate solutions, critical appraisal of textbooks) and reinforcing factors such as mentor-guided feedback and constant curricular review.  Visualization: Page 351. (Kua et al., 2021).  The Star Legacy Cycle is a pedagogical framework that encompasses the development of expertise and the ability to transfer expertise to new situations via challenge-based instruction and is derived from the principles of ‘How People Learn’ (HPL). This iterative way of teaching and learning immerses the learner in the four dimensions of the HPL effective learning environment and enables them to develop both conceptual and procedural knowledge. When this accumulated knowledge is transferred back to solve the challenge, adaptive expertise has developed.  No visualization. |